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MUSCULAR PARALYSIS AND ELECTROCARDIOGRAPHIC ABNORMALITIES

RESULTING FROM POTASSIUM LOSS IN CHRONIC NEPHRITIS

MADELAINE R. BROWN, M.D.
JAMES H. CURRENS, M.D.
AND
JOHN F. MARCHAND, M.D.
BOSTON

During the past two years 2 patients suffering from chronic nephritis have had several admissions to the wards of the Massachusetts General Hospital, each having one admission to the neurologic service because of muscular weakness. The first patient on his original admission to the medical service was diagnosed as having chronic nephritis, and his next admission was to the neurologic service for severe generalized muscular weakness. The second patient was admitted originally to the neurologic service complaining of periodic attacks of weakness and stiffness of the extremities. The fact that significant kidney damage was present was not discovered until a phenolsulfonphthalein urinary excretion test was done several days later.

Disorders of the electrolyte balance in the blood are often manifest by symptoms pertaining to the skeletal musculature. Thus in Addison's disease and familial periodic paralysis there is muscular weakness, while in hypocalcemia, excessive chloride loss and hyperventilation alkalosis there are not infrequently muscular cramps or at least evidence of increased muscular irritability.

The 2 cases to be reported are to be compared with cases of familial periodic paralysis. This is a rare disease characterized by recurrent attacks of muscular weakness or paralysis not preceded by a sense of pain or stiffness in the affected muscles. The attacks subside spontaneously in a few hours or one to two days. The lower extremities are often affected first and experience the greater paralysis, while the muscles supplied by the cranial nerves are spared. Precipitating factors are observed by most patients, such as heavy meals, unusual muscular exertion, excitement or sleep. Extensive chemical studies of patients with this disease have been reported, and the striking observation has been the fall of serum potassium during an attack. Potassium salts have been observed to be of therapeutic value since 1902. That the derangement of potassium metabolism is peculiar is indicated by the fact that the urinary excretion of potassium is not increased during an attack. Diuresis with water has, however, been demonstrated to induce attacks and to increase the loss of potassium in the urine.[1]

In renal failure various authors have noted an accumulation of body potassium, and some have noted concomitant alterations in the electrocardiogram.[2] The electrocardiographic changes accompanying a rise of serum potassium are an increase in the ampltude of the T waves. This is followed by an impairment of intraventricular conduction and cardiac arrest when the serum potassium reaches about 10 milliequivalents per liter. A search of the literature, however, has not revealed instances of chronic nephritis associated with symptoms and electrocardiographic changes resulting from excessive loss of body potassium. The following 2 cases of chronic nephritis are therefore presented because of unusual neurologic symptoms and electrocardiographic abnormalities apparently resulting from such potassium depletion.

CASE 1.—J. E., a man aged 29, a mechanic, was admitted to the Massachusetts General Hospital in February 1941 complaining of swelling of the feet and ankles of three months' duration. During this time he had noted swelling of the face and eyelids on arising in the morning. There had been no history of a throat or other infection. Physical examination revealed that the patient was well developed and in no distress. The tonsils were enlarged, but the heart and lungs were normal to examination. The blood pressure was 150 mm. of mercury systolic and 95 mm. diastolic. The abdomen was normal, and the deep tendon reflexes were active. There was moderate edema over the lower part of the legs.

The laboratory studies demonstrated a hemoglobin of 17 Gm., a red blood cell count of 4.8 million, and a white blood cell count of 9,000 to 18,000, with a normal differential count. The urine examination showed a p_H of 5.5 and a specific gravity between 1.008 and 1.020, with 4 plus albumin. The sediment was found to contain only occasional red blood cells and white blood cells, with a rare hyaline or granular cast. Blood chemistry studies revealed nonprotein nitrogen 17 mg. per hundred cubic centimeters, total protein 4.6 per cent, cholesterol 595 mg. per hundred cubic centimeters, and a total base of 150 milliequivalents per liter. The electrocardiogram was normal and is illustrated in figure 1. Repeated throat cultures were negative for beta hemolytic streptococci.

Dr. P. D. White gave helpful suggestions in the preparation of this paper.

From the Neurological and Medical Departments of the Massachusetts General Hospital and the Departments of Neurology, Medicine and Pharmacology of the Harvard Medical School. In part under the auspices of the University Committee on Pharmacotherapy.

1. Mitchell, J. K.; Flexner, Simon, and Edsall, D. L.: A Brief Report of the Clinical, Physiological and Chemical Study of Three Cases of Familial Periodic Paralysis, Brain **25**: 109, 1902. Aitken, R. S.; Allott, E. N.; Castledon, L. I. M., and Walker, M.: Observations on a Case of Familial Periodic Paralysis, Clin. Sc. **3**: 47, 1937. Gammon, G. D.; Austin, J. H.; Blithe, M. D., and Reid, C. G.: The Relation of Potassium to Periodic Family Paralysis: II. Experimental Data, Am. J. M. Sc. **197**: 326, 1939. Ferrebee, J. W.; Gerity, M. K.; Atchley, D. W., and Loeb, R. F.: Behavior of Electrolytes in Familial Periodic Paralysis, Arch. Neurol. & Psychiat. **44**: 839 (Oct.) 1940.

2. Wilkins, Lawson, and Kramer, Benjamin: Studies on the Potassium Content of Human Serum, Arch. Int. Med. **31**: 916 (June) 1923. Hoff, H. E.; Smith, P. K., and Winkler, A. W.: Cause of Death in Experimental Anuria, J. Clin. Investigation **20**: 607, 1941. Stewart, H. J., and Smith, J. H.: Changes in the Electrocardiogram and in the Cardiac Rhythm During the Therapeutic Use of Potassium Salts, Am. J. M. Sc. **201**: 177, 1941. Keith, King and Osterberg.[3] Thomson (footnotes 6 and 7). Finch and Marchand.[4] Marchand and Finch.[5]

During a course of six months in the hospital there was little change in his condition in spite of such therapeutic measures as tonsillectomy, a short course of both sulfapyridine and sulfanilamide, plasma transfusions, sodium citrate, ammonium chloride and urea by mouth. The carbon dioxide combining power varied from 18 to 21 milliequivalents per liter. The patient was discharged Aug. 5, 1941, taking 6 to 8 Gm. of ammonium chloride and 5 Gm. of urea each day.

Less than one month later (September 2) the patient was readmitted because of an ascending paralysis of the extremities. There was no history of an upper respiratory infection or fever. Two days before returning he noted some stiffness of his legs when awaking in the morning, and when attempting to walk his legs were weak and soon gave way. This paralysis progressed to involve the trunk muscles and upper extremities. Examination at this time revealed a flaccid paralysis of the extremities, and he was unable to raise his head. The cranial nerves were normal to examination, there was no loss of sensory perception, the deep tendon reflexes were hypoactive, and the abdominal and cremasteric reflexes were absent. There was no difficulty in swallowing or respiration.

Examination of the heart revealed an irregular heart action which was interpreted as due to multiple extrasystoles, but an electrocardiogram revealed partial auriculoventricular block with frequent dropped beats, the characteristic Wenckebach

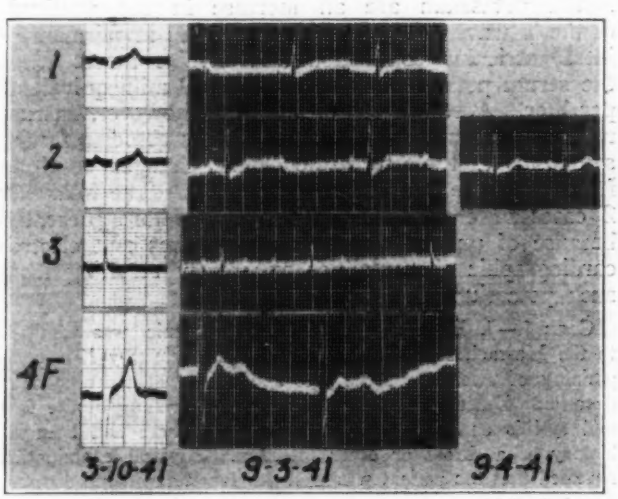

Fig. 1 (case 1).—The first tracing was taken when there was no muscular weakness and is within the limits of normal. The tracing taken Sept. 3, 1941 demonstrates low T waves and a disturbance in auriculoventricular conduction resulting in partial auriculoventricular block and the characteristic Wenckebach phenomenon. There is also depression of the RST segments in all leads. By the following day the rhythm, auriculoventricular conduction and T waves, at least in lead 2, had returned to normal.

phenomenon. The ST segments were depressed in all leads, and the T waves were low in amplitude (fig. 1). The edema of the extremities was unchanged. The spinal fluid was found to be normal, and blood chemistry revealed nonprotein nitrogen 33 mg. per hundred cubic centimeters, carbon dioxide 21.6 milliequivalents per liter and chloride 114 milliequivalents per liter. The urine and blood examinations were unchanged. Neostigmine (prostigmine) 1.5 mg. was given without benefit to the paralysis. Because it was feared that the intercostal muscles might become involved the patient was placed in the respirator.

The diagnosis of familial periodic paralysis was considered and the patient was therefore started on 2 Gm. of potassium chloride every four hours. The following day, after having received 8 Gm. of potassium chloride, he had an electrocardiogram in which the auriculoventricular conduction, the ST segments and the T waves had returned to normal (fig. 1). By this time the improvement in muscular strength was remarkable, and later the same day he was able to sit up in bed and move his extremities around freely. Improvement in muscular strength (first in the arms) was noted after the second dose, and by September 6 he had regained normal strength and was discharged on Sept. 11, 1941, taking 6 Gm. of ammonium chloride and 4 Gm. of urea. One week later the blood chloride was 116 milliequivalents per liter and the carbon dioxide combining power was 17.9 milliequivalents per liter. He was again seen on October 11, having lost 6 pounds (2.7 Kg.) but feeling less strong during the preceding few days. Because of this weakness, potassium chloride 3 Gm. daily was added to the regimen. The acidosis continued at about the same level, and edema fluid was retained if the ammonium chloride was omitted for any length of time. He was followed periodically in the outpatient department and when last seen (January 1943) had developed an increased degree of renal failure with azotemia. The blood pressure was 205 mm. of mercury systolic and 130 mm. diastolic, and the hemoglobin was 6 Gm. per hundred cubic centimeters. The blood studies revealed nonprotein nitrogen 60 mg. per hundred cubic centimeters, chloride 108 milliequivalents per liter, carbon dioxide 10.9 milliequivalents per liter, total protein 4.6 Gm. per hundred cubic centimeters, calcium 7.8 mg. per hundred cubic centimeters, phosphorus 10.8 mg. per hundred cubic centimeters and cholesterol 183 milliequivalents per liter. He had not suffered any recurrence of his paralysis but was troubled by much nausea and vomiting. The patient subsequently died in uremia on April 6, 1943 at the Boston City Hospital, where an autopsy was performed and revealed a chronic glomerulonephritis associated with interstitial fibrosis.

This case illustrates the development of transient flaccid paralysis in a patient with renal damage. Although the serum potassium was not determined, the response to potassium chloride with the resulting rapid subsidence of the paralysis quite like that in cases of familial periodic paralysis is sufficient evidence to justify the deduction that a disturbance of body potassium was the cause of the paralysis. The transient electrocardiographic changes associated with the attack contribute evidence of a disturbed body electrolyte balance. The changes seen, particularly the low T waves and impaired auriculoventricular conduction, are those which are also seen in patients who have a low serum potassium from other causes. The return of the electrocardiogram to normal after the administration of potassium chloride by mouth was striking. Potassium chloride was employed thereafter as an adjunct to the diuretic regimen of ammonium chloride and urea to prevent further paralysis. It should be remembered, however, that in patients with pronounced renal insufficiency, particularly when there is a decrease in urinary output or complete anuria, the kidney has difficulty in disposing of potassium and that potassium poisoning may be produced by the administration of potassium salts in abundant quantities. This may occur spontaneously [3] and may reach a degree of intoxication sufficient to cause cardiac arrest.[4]

Case 2.—E. K., a woman aged 34, single, a school teacher, was admitted to the neurologic service of the hospital in July 1941 for attacks of intermittent weakness and stiffness of her legs of fifteen months' duration. The attacks lasted from two to fourteen days. Altogether there were seven episodes, four of which occurred during the month before entry. Six of these were accompanied by stiffness of the neck on motion and some nausea and occasionally vomiting. On one occasion there was flaccid quadriplegia without spasticity.

At the time of admission physical examination revealed that the patient was suffering moderate pain and stiffness of the legs, particularly on the right. The blood pressure was 75 mm. of mercury systolic and 50 mm. diastolic. Examination of the heart gave otherwise normal results. The deep tendon reflexes were present but diminished. The remainder of the

3. Keith, N. M.; King, H. E., and Osterberg, A. E.: Serum Concentration and Renal Clearance of Potassium in Severe Renal Insufficiency in Man, Arch. Int. Med. **71**: 675 (May) 1943.
4. Finch, C. A., and Marchand, J. F.: Cardiac Arrest by Action of Potassium, Am. J. M. Sc. **206**: 507, 1943.

physical examination was not remarkable. The blood studies revealed a hemoglobin of 10 Gm. per hundred cubic centimeters, a red blood cell count of 4.1 million, and a white blood cell count of 9,900. An occasional macrocyte was observed in the blood smear. A gastric analysis revealed 3 units of free hydrochloric acid after subcutaneous histamine. The urine examination demonstrated a p_H of 6, a 2 plus albuminuria and a fixed specific gravity of from 1.008 to 1.012, even after subcutaneous posterior pituitary injection. An excretory urogram failed to outline the kidney pelves. The nonprotein nitrogen was 32 mg. per hundred cubic centimeters, chloride 107 milliequivalents per liter, carbon dioxide combining power 18.6 milliequivalents per liter, calcium 8.9 mg. per hundred cubic centimeters and phosphorus 3.9 mg. per hundred cubic centimeters. The phenolsulfonphthalein urinary excretion test was less than 15 per cent excretion in two hours.

The patient's symptoms subsided after one to two days in the hospital. At the time of the first admission a diagnosis of hysteria was made, and various other diagnoses were considered, such as pernicious anemia with spinal cord changes, rheumatoid arthritis, multiple sclerosis, myasthenia gravis, Addison's disease and familial periodic paralysis. The patient was transferred to the medical service when it became apparent that her symptoms were secondary to chronic renal disease with acidosis. She was discharged after six weeks, taking amphetamine sulfate 15 mg. twice daily. An electrocardiogram three weeks after subsidence of the symptoms was normal.

In January 1942 the patient was seen in the emergency ward complaining of stiffness of the muscles of the arms and legs and of the jaw muscles, making speech difficult. The attack began a few hours before entry. At the time of the physical examination there was difficulty with speech because of spasm of the jaw muscles. The lower extremities also were spastic. The heart was normal, and the rhythm was regular. The blood pressure was not taken. The nonprotein nitrogen of the blood was 52 mg. per hundred cubic centimeters. Within twenty-four hours the symptoms had subsided, and the patient returned to work.

In March 1942 there was a third admission to the emergency ward with similar complaints. Sixteen Gm. of potassium chloride was given during the first day, and it was the patient's impression that the muscular weakness and stiffness disappeared more rapidly than usual. Chemical examination of the blood on this visit revealed nonprotein nitrogen 56 mg. per hundred cubic centimeters, carbon dioxide combining power 16.1 milliequivalents per liter, chlorides 103 milliequivalents per liter, and plasma protein 6.2 Gm. per hundred cubic centimeters.

In June 1942 she was again seen in the emergency ward complaining of weakness and fatigue, attributed to hot weather. There was no stiffness or paralysis of her extremities, and no attacks had occurred since March 1942. The physical examination was not remarkable at this time, except for hypoactivity of the reflexes of the extremities and a blood pressure of 90/54. Chemical examination of the blood revealed nonprotein nitrogen 82 mg. per hundred cubic centimeters, carbon dioxide combining power 15.8 milliequivalents per liter, chlorides 100.4 milliequivalents per liter, total base 147 milliequivalents per liter and sodium 119 milliequivalents per liter.

In July 1942, one month later, she spent a week in the hospital for study. The physical examination was not remarkable except for a blood pressure of 80/55. The urine examination remained the same with a fixed specific gravity of 1.010, 2 plus albuminuria and occasional white blood cells. The blood hemoglobin was 10 Gm. per hundred cubic centimeters and the red blood cell count 3.3 million. The urine culture was negative. Chemical examination of the blood revealed nonprotein nitrogen 34 mg. per hundred cubic centimeters, chloride 104.6 milliequivalents per liter, carbon dioxide content 19.3 milliequivalents per liter, protein 4 Gm. per hundred cubic centimeters, phosphorus 5.6 mg. per hundred cubic centimeters, calcium 8.2 mg. per hundred cubic centimeters, phosphatase 7 units and sodium 139 milliequivalents per liter. The 17 ketosteroid excretion amounted to 5.3 mg. in twenty-four hours. The phenolsulfonphthalein excretion was 10 per cent in two hours.

All medication was then discontinued, and the patient did well and was able to return to teaching school. In November 1942 she was seen in the outpatient department and was advised to take 2 cc. of sodium citrate, three halibut liver oil capsules and two glasses of milk each day, because of a few cramps in the legs during the week previous to her visit. She continued this for a few weeks but stopped taking them when her supply became exhausted. Her health continued good, however, and she continued to teach school.

On Jan. 20, 1943 there was an attack of an entirely different nature. This was characterized by the gradual onset of generalized weakness, culminating in a complete collapse on the floor of the schoolroom during class. The paralysis was limited to the extremities. The patient was helped home and brought to the hospital on the following day, unable to raise herself in bed and scarcely able to move her hands. The physical examination was not remarkable except for the profound weakness of the extremities and total inability to move the legs or feet. The deep tendon reflexes were present and equal. The heart rhythm was regular, and the blood pressure was 80/50. The urine examination was the same as previously. Chemical examination of the blood revealed nonprotein nitrogen 62 mg. per hundred cubic centimeters, carbon dioxide combining power 10.7 milliequivalents per liter, chloride 105 milliequivalents per liter, protein 6.9 Gm. per hundred cubic centimeters, phosphorus 7.8 mg. per hundred cubic centimeters, calcium 8.7 mg. per hundred cubic centimeters. The electrocardiogram taken the same day, together with subsequent tracings, is illustrated in figure 2. These records revealed some depression of the ST segments in all leads with low to isoelectric T waves, which had disappeared four days later. No potassium chloride was given during this time, but the serum potassium after return to normal muscle function was 4.5 milliequivalents per liter.

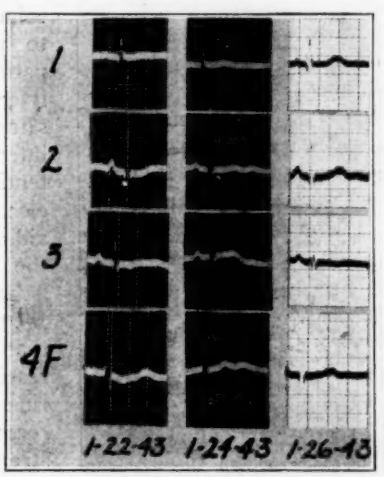

Fig. 2. (case 2).—The first tracing was taken when the patient had profound paresis of the voluntary muscles, particularly of the lower extremities. The low to isoelectric T waves and slight depression of the ST segments should be noted, which become normal by Jan. 26, 1943, at which time muscular strength was normal. The PR interval remains unchanged. The prominence of the U wave in lead 4-F on January 22 and 24 is of interest, but the explanation of this remains obscure. An electrocardiogram taken on January 25 during an episode of carpopedal spasm revealed a QT interval of 0.44 second with a calculated normal for the heart rate of 0.38 second.

The patient did well and returned to work but came back on March 13, 1943 complaining of cramps in the muscles of the extremities. At this time chemical examination of the blood revealed nonprotein nitrogen 64 mg. per hundred cubic centimeters, carbon dioxide combining power 26.8 milliequivalents per liter, chloride 84.9 milliequivalents per liter, calcium 9.4 mg. per hundred cubic centimeters and phosphorus 1.8 mg. per hundred cubic centimeters. There was no definite relief with calcium gluconate intravenously. It was considered at this time that the muscular cramps were due to the low chloride rather than to lack of calcium. Following recovery the patient returned to the hospital two months later with similar cramps and with blood chemistry findings of serum potassium 2 milliequivalents per liter, nonprotein nitrogen 54 mg. per hundred cubic centimeters, carbon dioxide combining power 17.7 milliequivalents per liter, chloride 97.4 milliequivalents per liter, calcium 7.2 mg. per hundred cubic centimeters, phosphorus 1.8 mg. per hundred cubic centimeters and phosphatase 2.8 mg. per hundred cubic centimeters. The plasma chloride was normal, but the acidosis had returned and the calcium was again low. The intravenous pyelogram revealed evidence of small kidneys with pronounced impairment of their

ability to concentrate diodrast. The patient has continued to do well on a regimen of 1 to 2 pints of milk, sodium citrate 6 Gm. and 50 thousand units of vitamin D daily. There was no subsequent recurrence of muscular paralysis. In June 1943 the blood calcium was 10 mg. per hundred cubic centimeters and the phosphorus was 4 mg. per hundred cubic centimeters.

This case was of interest from both the medical and the neurologic point of view. There seems little doubt that the episode of flaccid muscular paralysis was associated with an imbalance of body potassium. The low serum potassium and the abnormal electrocardiograms during the paralysis are the evidence for this interpretation. On the other hand, the cramps and carpopedal spasm at numerous times were associated with a low serum calcium and were relieved frequently by parenteral calcium therapy. However, the muscular cramps on one occasion were associated with a normal blood calcium and a low plasma chloride, suggesting that on this occasion the low chloride was the cause of the muscular cramps. The evidence of serious renal damage was clearcut and indicated tubular, as well as glomerular, damage. The tubular damage seemed to predominate in this patient, since the electrolyte disturbance overshadowed the mild, intermittent nitrogen retention. The value of the electrocardiogram as an aid at times in estimating the status of potassium balance is noteworthy. It should be observed that this patient did not receive potassium chloride during the period of recovery of muscular strength, as did patient 1 and that the electrocardiogram did not return to normal as rapidly as in the first case. The hypotension is explained by sodium loss and dehydration.

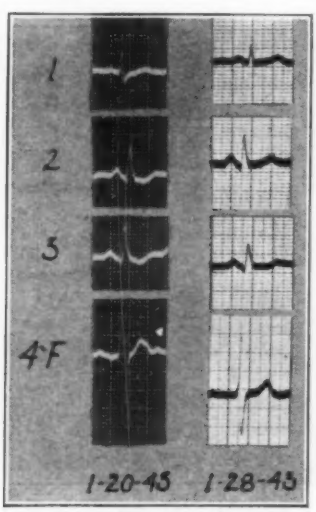

Fig. 3 (J. T. S.).—This patient has been the subject of reports twice previously in the literature (1898 and 1915) and on his last visit to this hospital developed a typical attack of paralysis the day following a herniorraphy. The electrocardiogram taken on Jan. 20, 1943 was while he was paralyzed and was repeated on January 28, at the time of complete recovery. He received potassium chloride with moderately prompt relief from his paralysis. The similarity of these electrocardiograms to those of the 2 cases reported is quite evident. The low T waves, the slight depression of the ST segments and the U wave in lead 4 should be noted. There is a slight impairment of intraventricular conduction in both tracings (QRS = 0.11 to 0.12), which is very likely due to coronary heart disease.

COMMENT

Interest in the difficulty of potassium excretion by the kidneys in chronic nephritis dates from Smillie's [5] observation that the administration of potassium may be harmful in the presence of renal insufficiency. Since that time further observations have indicated that the diseased kidney may have difficulty in excreting potassium and that potassium sometimes accumulates in excessive quantities in the blood and tissue fluid. In the 2 patients presented here there was no evidence of serious renal insufficiency in regard to nitrogen retention. The depletion of the base, particularly of sodium and potassium, may be explained by a failure of the diseased kidney to form ammonia in association with the excretion of acid radicals. The effect of such a failure may have been aggravated in case 1 by the extra chloride given as ammonium chloride.

In recent years there have been several reports concerning the effect of elevated serum potassium on the electrocardiogram. It has been noted that in renal insufficiency with retention of potassium the T waves increase in amplitude. With more advanced stages of intoxication there is impairment of intraventricular conduction and finally cardiac arrest.[6] These changes had been noted previously in animals during experimental renal insufficiency, and the toxic effect of the excessive potassium on the heart was the cause of death. It has been noted that in adrenal insufficiency the occasional accumulation of potassium may affect the electrocardiogram.[7] Conversely, in overactivity of the adrenal cortex the potassium may be unusually low [8] and the electrocardiogram may reveal low or isoelectric T waves.[9]

The effect of excessive desoxycorticosterone acetate treatment in Addison's disease results in loss of body potassium and may account for the electrocardiographic changes observed in patients who have developed congestive heart failure as a result therefrom.[10] In familial periodic paralysis definite electrocardiographic abnormalities have been observed, and these include lowering of the T waves and an increase in the auriculoventricular conduction.[11] In figure 3 are illustrated the electrocardiograms taken during and after paralysis of a patient with characteristic familial periodic paralysis, originally reported from this hospital by Taylor in 1898 [12] and again by Edsall and Means [13] in 1915. It is of interest that the patient reported in 1915 had found potassium salts of benefit in restoring muscular strength during an attack of paralysis.

In both instances of renal failure presented here the T waves in the electrocardiogram were low and returned to normal with the subsidence of the paralysis. The auriculoventricular conduction in the first case was prolonged, giving rise to the Wenckebach periods and intermittent dropped beats. These changes in the electrocardiogram, namely decreased amplitude of the T waves, depression of the ST segments and partial auriculoventricular block, are to be compared with the toxic effects of digitalis on the electrocardiogram. It is of interest, in this regard, that a decrease of potassium in the cardiac muscle has been observed by several authors to result from giving toxic doses

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of digitalis.[14] Potassium salts have also been reported to dispel ventricular premature systoles which are produced by toxic doses of digitalis.[15]

SUMMARY

In 2 patients there was an association of chronic nephritis and episodes of flaccid paralysis of the extremities. In the first patient the degree of the acidosis was aggravated by the administration of ammonium chloride. The attacks of paralysis resembled episodes of familial periodic paralysis. The abnormal electrocardiogram in each case was similar to the electrocardiogram observed in periodic paralysis and in serum potassium depletion from other causes. Serial electrocardiograms were of value in demonstrating the nature of the paralytic attacks. The oral administration of potassium chloride was apparently of benefit in overcoming the muscular paralysis.

A third patient admitted to the neurologic service of the Massachusetts General Hospital has recently been diagnosed as having muscular paralysis due to low serum potassium and renal disease. This patient was admitted first on Oct. 15 and discharged on Oct. 26, 1943. He was a Portuguese garage mechanic aged 40, married, who first noted weakness of the left leg and soreness of the neck and back on October 13. The next day the arms and legs were paralyzed and he could walk only with aid.

The past history showed that he had passed two small stones and had complained of hematuria at the age of 38.

At the time of admission the neurologic examination was negative except for the weakness of the arms, legs, neck and trunk. The urine showed a 2 plus albumin, many white blood cells and an occasional red blood cell, and a specific gravity of 1.004. The lumbar puncture and the Hinton test were negative. The weakness disappeared, and he was discharged with the diagnosis of radiculomyelitis.

The patient was admitted a second time on Nov. 11 and discharged on Dec. 8, 1943. He had had a return of the weakness two days before and had passed some gravel in the urine four days before admission. There was sudden improvement the day of admission and, when first seen, he could sit up and stand.

The neurologic examination and lumbar puncture were again negative. Urine examinations were the same as those of the previous admission. The serum calcium was 9.1 mg. per hundred cubic centimeters, chloride 107 milliequivalents per liter and nonprotein nitrogen 24 mg. per hundred cubic centimeters. The potassium on November 27 was 2.5 milliequivalents per liter and on December 2 it was 2.9 milliequivalents per liter. The urine concentration test never exceeded a specific gravity of 1.012. Phenolsulfonphthalein urinary excretion test showed 82 per cent. X-ray examination of the abdomen showed a kidney stone on the left and possibly on the right. Retrograde and intravenous pyelograms showed stones in both kidneys. The electrocardiogram showed a normal tracing on November 24 with the exception of a low upright T wave, characteristic of low serum potassium. The diagnosis was kidney stones accompanied by a lesion of the renal tubules without glomerular involvement and low serum potassium.

The patient improved on sodium citrate, potassium citrate and calcium gluconate. He was discharged on this medication with instructions to test the p_H of the urine daily.

264 Beacon Street.

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INFLUENCE OF CONTINUOUS CAUDAL ANALGESIA AND ANESTHESIA

ON THE BLOOD LOSS DURING THE THIRD STAGE OF LABOR

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From the dawn of medical history to the present day the handling of the third stage of labor has been an esoteric problem attested by the voluminous literature and the manifold methods that have been devised for the most beneficent results. A few of these stratagems will serve to refresh the memory and generate smiles of sympathy in compliment to the infinite ingenuity of our forebears. Methods[1] adhered to by the ancients consisted in pulling on the umbilical cord, pressing on the belly, giving emetics, tickling the nose to provoke sneezing, encouraging the woman to blow hard into a gourd, bottle or closed fist, and removing the placenta by hand from the uterus or vagina. Then came the idea of moderate cord traction plus fundal pressure; in 1767 John Harvie of the Rotunda Hospital, Dublin, Ireland, proffered a scheme in which he advised guarding the uterus for fifteen to thirty minutes and then exerting fundal pressure, resulting in delivery of the afterbirth. The Dublin method was promoted in 1783; in 1799 Osiander talked of "expression" of the placenta, and in 1820 he resolved on a method of expression of the secundines resembling the later Credé method but adding traction on the cord. Credé of Leipzig first advocated his time reverenced method in 1853; this and the modified Credé method designated as "expression of the placenta" from the vagina and first recommended by Williams is still in wide practice today. Subsequently Alhfeld postulated his "hands off the uterus" doctrine. Baudelocque[2] in 1789 was the first to distinguish the separation from the expulsion of the placenta and described the two ways in which the placenta could be extruded from the uterus. In 1865 Schultze decided that expulson usually took place the first way Baudelocque had described. This remained undisputed until 1871, when Duncan contended that the second method was the more frequent. Thereafter the methods were designated by the names Schultze and Duncan respectively. De Lee's plan was based on the Dublin method. Mojon and Gabaston determined a procedure of injecting a solution into the umbilical vein to increase the volume and weight of the placenta and hasten its detachment, especially if the placenta was thin and widespread in its attachment. Fuchs advised lifting the uterus out of the pelvis as a means of aiding separation of the membranes from the uterine cavity. Greenhill employs the method advocated by Brandt and reiterated by Andrews. Brandt[3] uses the Dickinson-Pomeroy method, discussed thor-

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3. Brandt, M. L.: Am. J. Obst. & Gynec. **25**: 662, 1933.

oughly by Smith, of lifting the uterus out of the pelvis as a test for placental separation, keeping the uterus high and at the same time making simple suprapubic pressure to expel the afterbirth.

Today, the problem of placental expulsion still exists, though it is now superseded in part by its accompanying problem of blood loss. Even as food is the potential potent weapon of war, so is blood the potential potent weapon against the onset of disease; every drop saved is a weapon gained to combat possible morbidity and mortality. "The blood is the Life" (Exodus 12:1). The obstetric corollary of this Biblical statement is, as De Lee [4] pointed out, "save blood." One of the most pertinent functions of the accoucheur is to conserve a woman's blood. This is vigorously borne out by the startling statement that "more women die from accidents of the third stage of labor than during the other two combined."

Strictly speaking, the duration of the third stage of labor is from the birth of the child to the birth of the placenta in toto. Some men have extended this period to include the time needed for complete involution of the uterus; but, from a practical point of view, the third stage of labor should include at least the first hour post partum. It is in this period following delivery of the baby and in the first hour following delivery of the placenta that intrauterine bleeding occurs as a result of poor uterine muscle tone and that the aptly termed "accidents of the third stage" occur. As Calkins [5] expresses it, "constant attention to constant uterine contraction means controlled blood loss."

The conviction or belief that there is a physiologic blood loss in the third stage of labor developed through an attempt to rationalize away the apparent 200 to 400 cc. volume of bleeding that occurred not infrequently in the so-called noninfluenced spontaneous deliveries. It is of universal opinion and observation that the patient's recovery is accelerated in proportion to the blood loss; the smaller the quantity of blood lost at the time of delivery, the quicker the patient will recuperate and lactate, and the greater are the chances of recovery without infection. Hence, in the last few years new technics for the control of bleeding in the third stage of labor have been developed. The ancients were concerned primarily with extracting the afterbirth; now we are concerned with expeditious delivery of the placenta in conjunction with minimal blood loss and without injury to the uterus. The uses and abuses [6] of posterior pituitary injection and of ergonovine hydracrylate and their combinations and variations, their administration intramuscularly or intravenously or both, their most propitious times for injection, have filled the literature. Again this attests that controlled blood loss in the third stage of labor is considered today of momentous import.

The mechanism of the third stage of a normal labor is well described by Brandt.[3] He states that "as the child is expelled . . . the size of the uterus diminishes partly as a result of muscular tone and partly due to uterine muscle contraction. As a result of this change . . . there is developed a layer of overdistended veins in the decidua spongiosa lying between a firmly contracted uterine wall and a more or less solidly compressed placenta. . . . the congested venous sinuses burst and the extravasated blood under tension causes tearing of the very fine septa of the spongiosa, thereby detaching the placenta from its uterine site. For this normal mechanism to occur . . . contracted uterine wall and compressed compact placenta must be present. If either of these is absent, separation does not follow a normal course. . . . as the separated placenta is detached from its uterine site, it folds on itself but is held in the uterine cavity because of the firm attachment of the membranes. If the uterine contraction that has separated the placenta is strong, the placenta may be expelled into the lower uterine segment and upper vagina, the placenta acting as a foreign body. . . . when this occurs, the retroplacental hematoma does not form and can have no function. If, however, after placental detachment, with the membranes still firmly adherent, the separating pain is not strong enough to force the placenta out of the uterine cavity, bleeding both from the intervillous spaces of the placenta and from the maternal sinuses takes place during the following uterine relaxation. The subsequent uterine contraction acting on the increased bulk as on a hydraulic wedge forces the placenta down into the lower segment, peeling the membranes off the uterine wall at the same time. Manipulation of the uterus at this time may detach the membranes at one point so that the retroplacental blood escapes without completely detaching the membranes at the placental border, resulting in retention of the placenta with increased bleeding."

The mechanism of the third stage of labor would normally take place in a patient who has undergone no outside influence such as barbiturates, morphine, scopolamine, inhalation anesthesia or undue abdominal uterine manipulation. However, it is against the modern day conception of obstetrics to permit a woman to enter and proceed in travail without aid directed particularly to her relief of that pain which, in the eyes of man, is the most agonizing and harrowing experience of parturition. Nature makes an attempt to follow a natural course but, with this outward interference, the picture is altered in that uterine muscle tone is inhibited and uterine muscle contractility is delayed, preventing rapid separation and extrusion of the placenta; as a result, the amount of blood lost has come to be looked on as natural or physiologic.

The constant endeavor to eliminate pain and minimize blood loss heretofore has been realized to some extent. Now, with the adaptation of continuous caudal analgesia and anesthesia, the tearing pains of childbirth are allevated from early in the first stage; no deleterious effect on the progress or termination of labor is produced; the volume of blood lost at the time of placental deliverance is definitely decreased. Eliot Bishop [7] says that "proper analgesia and good obstetrics will, as the late Ralph Pomeroy said, 'convert an unterrified and undamaged primipara into a competent multipara.'"

During the past year and a half we have had many opportunities to observe the striking results of the procedure and technic which has been so well established. It has been our good fortune at the Philadelphia Lying-In Hospital to be closely associated in this work with Drs. Hingson and Edwards of the United States Public Health Service, the originators of this method.

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Attention is called to the many benefits of this method as well as to some of the contraindications to its administration. Most of the contraindications have been elaborated on by the originators [8] and by other observers, such as Lull,[9] Gready and Hesseltine,[10] Adams, Lundy and Seldon,[11] Irving, Lippincott and Meyer,[12] Block and Rochberg,[13] Siever and Mousel [14] and others.

Many of the important points are lost by critics who condemn the method and the associated marvelous results because of their lack of experience and knowledge of the technic. They lose sight of the important factors during and following the relief of the pains of labor. In their overzealous enthusiasm they frequently offer destructive rather than constructive criticism, and their lack of experience and ignorance of the fundamentals of anatomy, physiology and pharmacology is the basis of their criticism. As this method of relief of pain in childbirth is founded on sound and safe principles, if the technic is fulfilled correctly, definite and striking results can be expected.

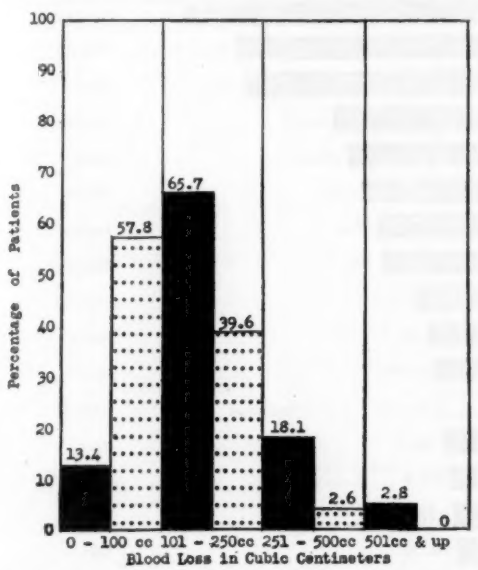

Chart 1.—Composite of tables 1 and 2. Solid columns, blood loss under inhalation anesthesia; stippled columns, blood loss under continuous caudal anesthesia. Of patients delivered under continuous caudal anesthesia 97.4 per cent fall into blood loss group 0 - 250 cc. Of patients delivered under inhalation anesthesia 79.1 per cent fall into blood loss group 0 - 250 cc.

One of the outstanding benefits to a patient who is delivered under caudal analgesia is the prompt termination of the third stage of labor and the amazingly small amount of blood lost. The placental separation is surprisingly prompt, and the abrupt separation and expulsion is accompanied by even less than moderate blood loss. It has been our observation that much separating hemorrhage is not the rule. The system employed for collecting blood is as follows: A sterile basin is held against the perineum during the period of active bleeding; routine measurement of the blood is done. This estimation includes all fluids from the vaginal canal after termination of the second stage of labor until completion of the episiotomy repair. Additional and uncollected blood during the third stage and during the first hour post partum is estimated and added to make the total loss. (The patients are kept in the delivery room for one hour post partum under constant surveillance. It has been noted that the amount of blood lost during this interval, as indicated by the number of clots expressed and blood appearing on the vulvar pads, is clearly diminished.) No accurate hemoglobin estimations of the blood collected and of the maternal blood are done. This, we have always believed, is the only reliable way of accurately measuring blood loss. The values we have obtained are subject to criticism; but, at least, the method does show the decreased incidence in abnormal blood loss with reasonable accuracy, and it has impressed on us, in case after case, the repeatedly low blood loss. Pastore's [15] statement that there is a tendency to underestimate losses above 450 cc. and to overestimate losses below 150 cc. tends to be fairly accurate, and we have tried to avoid such error.

It is difficult or unfair to expect a strict comparison between our data and the data collected from the literature, as no one technic for estimation of blood loss was used. However, we believe that a comparison is still worth while if it is made with the figures given by competent observers.

TABLE 1.—*Third Stage of Labor Conducted Under Inhalation Anesthesia*

Blood Loss, Cc.	Number of Cases	Blood Loss, Cc.
0 - 50	15	375
50 - 100	119	8,925
101 - 200	501	78,625
201 - 250	156	35,100
251 - 300	109	29,975
301 - 350	30	9,750
351 - 400	27	9,125
401 - 500	15	6,750
501 and above	28	14,000
	1,000	192,625

Average blood loss per patient = 192.62 cc.

0 - 100 cc. blood loss experienced by 13.4%
101 - 250 cc. blood loss experienced by 65.7%
251 - 500 cc. blood loss experienced by 18.1%
501 cc. & up blood loss experienced by 2.8%

0 - 250 cc. group = 79.1%

TABLE 2.—*Third Stage of Labor Conducted Under Continuous Caudal Analgesia and Anesthesia*

Blood Loss, Cc.	Number of Cases	Blood Loss, Cc.
0 - 50	176	4,400
51 - 100	402	30,150
101 - 200	300	45,000
201 - 250	96	21,600
251 - 300	6	1,800
301 - 350	8	2,800
351 - 400	10	4,000
401 - 500	2	1,000
501 and up	0	0
	1,000	110,750

Average blood loss per patient = 110.75 cc.

0 - 100 cc. blood loss experienced by 57.8%
101 - 250 cc. blood loss experienced by 39.6%
251 - 500 cc. blood loss experienced by 2.6%

No patient lost more than 501 cc. of blood

0 - 250 cc. group = 97.4%

8. Hingson, R. A., and Edwards, W. B.: Continuous Caudal Analgesia, J. A. M. A. **123:** 538 (Oct. 30) 1943.
9. Lull, C. B.: Personal communication to the authors; paper presented before the New York Obstetrical Society, November 1943, to be published.
10. Gready, T. G., Jr., and Hesseltine, H. C.: Continuous Caudal Anesthesia in Obstetrics, J. A. M. A. **121:** 229 (Jan. 23) 1943.
11. Adams, R. C.; Lundy, J. S., and Seldon, T. H.: Continuous Caudal Anesthesia or Analgesia, J. A. M. A. **122:** 152 (May 15) 1943.
12. Irving, F. R.; Lippincott, A., and Meyer, F. C.: New York State J. Med. **43:**1025, 1943.
13. Block, N., and Rochberg, S.: Am. J. Obst. & Gynec. **45:** 645, 1943.
14. Siever, J. M., and Mousel, L. H.: Continuous Caudal Anesthesia in Three Hundred Unselected Obstetric Cases, J. A. M. A. **122:** 424 (June 12) 1943.
15. Pastore, J. B.: Am. J. Obst. & Gynec. **31:** 78, 1936.

The average blood loss in our series of 1,000 obstetric cases of delivery under inhalation anesthesia was 192.62 cc., as shown in table 1; the average blood loss in our series of 1,000 obstetric cases of delivery under continuous caudal analgesia and anesthesia was 110.75 cc., as shown in table 2. These two figures are contrasted with Williams's [16] 343.7 cc. (measured), Alhfeld's [17] 505.1 cc. (measured), De Lee's 500 cc., Tarnier's 600 cc., Pastore's [18] 271.3 cc., Tucker's 300 cc. (measured), Calkins' [19] 222 cc. and 179 cc. (partially measured), Plass's [20] 317 cc., Fortin's [21] 275 cc., Ryder's [22] 177 cc., Scott's [23] 198.7 cc., Jess's [24] 187.8 cc., Leff's [25] 171.75 cc., and Brandt's [3] 195 cc. These data are presented in table 4. Pastore [15] in 1936 reported 500 consecutive cases in which there were 32 with a blood loss of 600 cc. or more, giving an incidence of 6.4 per cent, and in 1937 he reported [18] 1,870 consecutive cases in which there were 133 with a blood loss of 600 cc. or more, giving an incidence of 7.1 per cent; Williams [16] in 1919 reported an incidence of 13 per cent in his series of 1,000; Polak [26] in 1915 reported 1,306 consecutive home deliveries and 694 operative deliveries with only three hemorrhages; Brandt [3] in 1933 reported 800 consecutive deliveries with an incidence of 1.25 per cent; Peckham and Kuder [27] in 1933 in a study of 19,200 consecutive deliveries at Johns Hopkins Hospital, found an incidence of 6.14 per cent; Calkins [5] in 1933 reported an incidence of 2.5 per cent in 800 cases; Tucker and Benaron [28] in 1938 reported an incidence of 4.2 per cent in 14,156 consecutive deliveries on the home delivery service of the Chicago Maternity Center; Urner [29] in 1936 reported an incidence of 3.4 per cent in 7,500 consecutive cases; Fortin [21] in 1938 reported an incidence of 7.4 per cent in 200 consecutive cases in which barbituric acid derivatives had been given during the first stage of labor. In our group of 1,000 maternity patients delivered under inhalation anesthesia, 28 had a blood loss of 501 cc. or more, giving an incidence of 2.8 per cent; in the 1,000 maternity patients delivered under continuous caudal analgesia and anesthesia there was no instance of a blood loss of 501 cc. or more. These data are shown in table 5. We found that under inhalation anesthesia 79.1 per cent of patients fall into the blood loss group of 0-250 cc. as compared to 97.4 per cent of the patients delivered under continuous caudal analgesia and anesthesia. These figures are shown in chart 1 (tables 1 and 2).

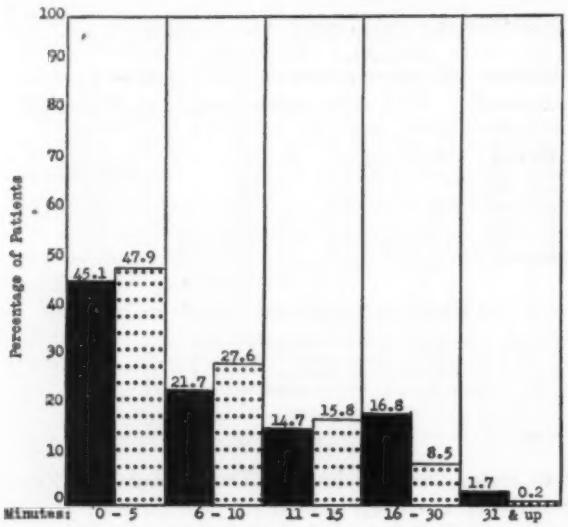

Chart 2.—Data from table 3. Solid columns, patients delivered under inhalation anesthesia; stippled columns, patients delivered under continuous caudal anesthesia. Of patients under continuous caudal anesthesia 91.3 per cent completed the third stage of labor in fifteen minutes or less. Of patients under inhalation anesthesia 81.5 per cent completed the third stage of labor in fifteen minutes or less. Of the patients 9.8 per cent had a third stage of labor longer than fifteen minutes under inhalation than under continuous caudal anesthesia.

TABLE 3.—*Number of Patients Delivered Under Continuous Caudal and Under Inhalation Anesthesia*

Duration of the Third Stage of Labor in Minutes	Number of Patients Delivered Under Inhalation Anesthesia	Number of Patients Delivered Under Continuous Caudal Anesthesia	Percentage	
			Inhalation Anesthesia	Continuous Caudal Anesthesia
0 - 5	451	479	45.1	47.9
6 - 10	217	276	21.7	27.6
11 - 15	147	158	14.7	15.8
16 - 30	168	85	16.8	8.5
31 and above	17	2	1.7	0.2
	1,000	1,000	100.0	100.0

91.3% of patients completed 3d stage of labor under continuous caudal anesthesia in 0-15 min.
81.5% of patients completed 3d stage of labor under inhalation anesthesia in 0-15 min.

Under inhalation anesthesia, twice the number of patients had a 3d stage of labor longer than 15 minutes as compared with those who had continuous caudal analgesia

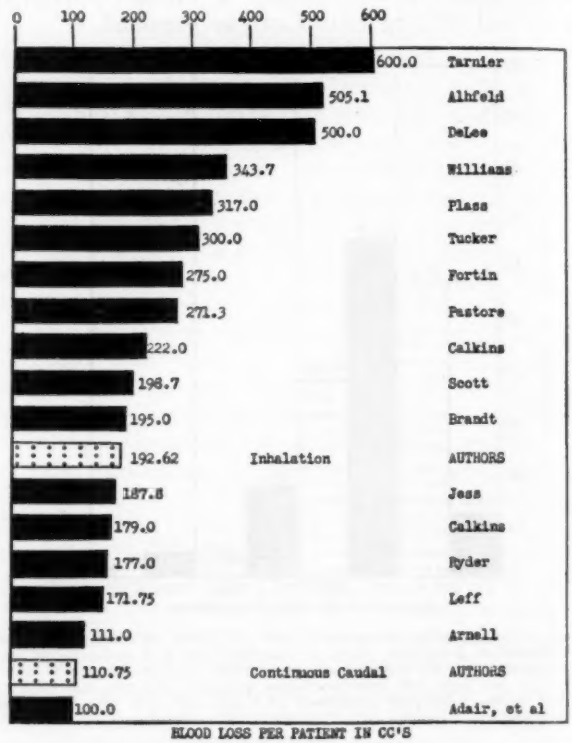

Chart. 3.—Data from table 4.

16. Williams, J. W.: Am. J. Obst. **80:** 1, 1919.
17. Alhfeld, F.: Ztschr. f. Geburtsh. u. Gynäk. **51:** 341, 1904.
18. Pastore, J. B.: Am. J. Surg. **35:** 417, 1937.
19. Calkins, L. A.: Am. J. Obst. & Gynec. **18:** 578, 1929. De Lee and Greenhill.[4]
20. Calkins, L. A.; Litzenberg, J. C., and Plass, E. D.: Am. J. Obst. & Gynec. **21:** 175, 1931.
21. Fortin, F. F.: Am. J. Obst. & Gynec. **35:** 761, 1938.
22. Ryder, G. H.: Am. J. Obst. & Gynec. **2:** 61, 1921-1922.
23. Scott, R. A.: Surg., Gynec. & Obst. **43:** 651, 1926.
24. Jess, F.: Zentralbl. f. Gynäk. **50:** 2440, 1926.
25. Leff, Morris: Am. J. Obst. & Gynec. **18:** 868, 1929.
26. Polak, J. C.: Surg., Gynec. & Obst. **21:** 590, 1915.
27. Peckham, C. H., and Kuder, K. K.: Am. J. Obst. & Gynec. **26:** 361, 1933.
28. Tucker, B. E., and Benaron, H. B. W.: M. Clin. North America **22:** 197, 1938.
29. Urner, J. A.: Minnesota Med. **19:** 234, 1936.

The use of ergonovine in the early phase of the third stage of labor has materially shortened the duration of the third stage and decreased the volume of blood lost at that time. Adair and his associates [30] in 51 patients found an average blood loss of 100 cc., the maximum loss being 300 cc. in 86 per cent of the patients while 13.7 per cent experienced a loss of 500 cc. or over. Reich,[31] Eastman,[32] Diddle [33] and Davis and Boynton [34] present data showing that intravenous injection of a therapeutic dose of ergonovine just preceding expulsion of the shoulders in vertex presentations or of the after-coming head in breech presentations is relatively safe and effective in reducing incidence of postpartum hemorrhage due to uterine atony. Roberts [35] found that, with the exception of about 1.5 per cent of patients so treated, this procedure did not bring about any appreciable decrease in volume of blood lost in the third stage of labor. Arnell, in discussing Diddle's article,[33] presented data in which blood loss was determined by the chemical colorimetric method. He found that, when ergonovine hydracrylate was given intravenously at the time of impingement of the anterior shoulder of the fetus under the symphysis, blood loss in 500 cases averaged 111 cc. The incidence of "trapped" placenta in the method described is definitely increased. Among the 1,000 patients delivered under inhalation anesthesia at the Philadelphia Lying-In Hospital there were 6 instances in which manual extraction of the secundines was necessary to

TABLE 4.—*Comparison of Blood Losses Reported in the Literature*

Author	Blood Loss per Patient, Cc.	Author	Blood Loss per Patient, Cc.
Tarnier	600.0	Brandt	195.0
Alhfeld	505.1	Authors, inhalation	192.62
De Lee	500.0	Jess	187.8
Williams	343.7	Calkins	179.0
Plass	317.0	Ryder	177.0
Tucker	300.0	Leff	171.75
Fortin	275.0	Arnell	111.0
Pastore	271.3	Authors, continuous caudal	110.75
Calkins	222.0	Adair et al	100.0
Scott	198.7		

complete the third stage of labor. In our entire 1,000 cases under continuous caudal analgesia and anesthesia there was but one "trapped" placenta, which occurred in the early part of the series when the oxytocic drugs were being administered routinely after the second stage of labor was completed. No evidence of trapping or incarceration has occurred since the oxytocic has been given after completion of the third stage of labor.

The duration of the third stage of labor in itself is incidental, the blood loss being the factor of importance, but in comparing the times for the third stage of labor in patients delivered under inhalation anesthesia with those delivered under continuous caudal analgesia we found that under the latter the time factor too had decreased. The third stage of labor was completed in five minutes or less by 47.9 per cent who had continuous caudal anesthesia as compared with 45.1 per cent given inhalation anesthesia; 27.6 per cent who had continuous caudal analgesia and anesthesia completed the third stage of labor in six to ten minutes as compared with 21.7 per cent given inhalation anesthesia. The third stage of labor was completed in eleven to fifteen minutes by 15.8 per cent who had continuous caudal anesthesia as compared with 14.7 per cent given inhalation anesthesia. Under continuous caudal analgesia and anesthesia about 10 per cent

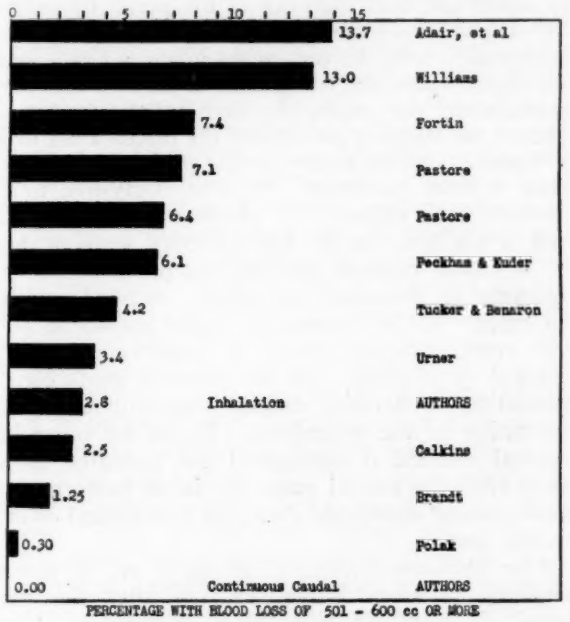

Chart 4.—Data from table 5.

more patients completed the third stage of labor in fifteen minutes or less than under inhalation anesthesia. Twice the number of patients had a third stage of labor longer than fifteen minutes under inhalation anesthesia as compared with those who had continuous caudal analgesia and anesthesia. There were but 2 instances in the group of patients under continuous caudal anesthesia in which completion of the third stage took longer than thirty-one minutes, as compared to

TABLE 5.—*Comparison of Incidence of Hemorrhage Reported in Literature and Incidence of Hemorrhage Found at Philadelphia Lying-in Hospital.*

Author	Number of Patients	Percentage with Blood Loss of 501-600 Cc. or More
Adair et al	51	13.7
Williams	1,000	13.0
Fortin	200	7.4
Pastore	1,870	7.1
Pastore	500	6.4
Peckham and Kuder	19,200	6.14
Tucker and Benaron	14,156	4.2
Urner	7,500	3.4
Authors, inhalation	1,000	2.8
Calkins	800	2.5
Brandt	800	1.25
Polak	2,000	0.30
Authors, continuous caudal	1,000	0.00

17 instances in the group of patients under inhalation anesthesia. These figures are represented in table 3 and chart 2.

We have found that the management of the third stage of labor simplifies itself. Our present procedure is to follow Alhfeld's "hands off the uterus" policy until the first firm uterine contraction has occurred following delivery of the infant. The maneuver used at this time is a combination or amalgamation of Brandt's, Pastore's and Calkins' technic. At the time of the first firm uterine contraction, in cases without

30. Adair, F. L.; Davis, M. E.; Kharasch, M. S., and Legault, R. R.: Am. J. Obst. & Gynec. **30**: 466 and 740, 1935.
31. Reich, A. M.: Am. J. Obst. & Gynec. **37**: 224, 1939.
32. Eastman, N. J.: Internat. Clin. **3**: 264, 1939.
33. Diddle, A. W.: Am. J. Obst. & Gynec. **43**: 450, 1942.
34. Davis, M. E., and Boynton, M. W.: Am. J. Obst. & Gynec. **43**: 775, 1942.
35. Roberts, P. C.: Am. J. Obst. & Gynec. **43**: 849, 1942.

bleeding, "the left hand of the assistant is placed flat over the abdomen with the fingers directed under the symphysis. The left hand prevents the fundus from entering the pelvis."[15] The placenta is delivered, not at the price of abdominal, uterine or intestinal bruising. Following delivery of the placenta, the uterus is raised and held high out of the pelvis by means of the Dickinson-Pomeroy technic. If bleeding occurs immediately after delivery of the infant, a Credé maneuver is performed and, at the time of the first firm uterine contraction, the aforementioned technic is followed. Should the bleeding persist and the placenta not deliver, a manual removal under aseptic precautions would be done without hesitation. If, after forty-five to sixty minutes have elapsed, the placenta has not separated and is not lying in the lower uterine segment, and if no occult or obvious bleeding has occurred and management as described has failed, manual removal is indicated. Under continuous caudal anesthesia at that late stage, difficulty would be experienced since the cervical os is closed and the operator needs complete relaxation to facilitate cervical dilatation and manual extraction of the secundines. If, on the other hand, manual removal is anticipated and indicated immediately after the second stage, it can be performed ably under caudal anesthesia alone, for the cervical os is still widely patent.

Our previous technic of giving 1 cc. of posterior pituitary injection intramuscularly after the second stage of labor and 1 cc. of a preparation of ergot intramuscularly after completion of the third stage was abandoned. It was found not necessary to use any oxytocic drug until the third stage was completed. Our present technic consists in giving 1 cc. of the preparation of ergot intramuscularly or 1 cc. containing 0.5 cc. of the preparation of ergot and 0.5 cc. of posterior pituitary injection intramuscularly in the outer surface of the thigh, as no sensation is experienced in the introduction—this in preference to the deltoid region, where some pain is usually experienced. It is wise to give the ergot preparation after the delivery of the placenta, for some relaxation might occur following the loss of sensory inhibition to the uterus. The placenta is carefully inspected as a routine procedure, and no ragged mangled maternal surfaces have been seen. Smooth, regular cotyledons with very few occasional and small clots attached is the rule. Involution of the uterus, after caudal analgesia, is definitely more prompt; in the past year rarely have we seen the subinvolution which occasionally was found in routine daily fundal palpation. The lochial flow is decreased and is usually only slightly serosanguineous at the end of the first week. Rarely are blood clots seen in the lochial discharge.

The placental attachment was carefully observed in 75 cases of cesarean section done under this analgesia. The peritoneal area on the outer surface was remarkable in that it was always found to be very pale and decidedly more crinkled or puckered than in sections done under spinal or inhalation anesthesia. This phenomenal characteristic remained and was noted to be present even after the placenta and membranes were lifted out of the uterus; it was still present when the uterine closure was completed. As Lahmann and Mietus[36] have pointed out in their work on single shot caudal anesthesia for cesarean section, the uterus retains its tone, placental separation is rapid and there is a minimal blood loss. Another observation of moment made by us was that in cesarean section, low or classic type, the uterine myometrial bleeding on incision was decidedly diminished. The sinuses appeared to close more promptly, rapidly and effectively than in those instances in which intravenous ergot preparations were used.

Possibly because of widespread use of caudal analgesia and anesthesia it may be necessary to rewrite the mechanism of the third stage of labor. On the other hand, the use of continuous caudal analgesia and anesthesia may have resulted in no new mechanism for the third stage of labor but, rather, has enabled the uterus to approach more closely its normal mechanism.

36. Lahmann, A. H., and Mietus, A. C.: Am. J. Obst. & Gynec. 46: 274, 1943.

SUMMARY AND CONCLUSIONS

The blood loss determinations were estimations made by measuring the blood lost from termination of the second stage of labor up to and including the first hour post partum.

The blood loss during the third stage of labor has been decreased decidedly since the adaptation of continuous caudal analgesia and anesthesia. No patient under caudal anesthesia had a blood loss of 501 cc. or more as compared with 28 patients who had a blood loss of 501 cc. or more under inhalation anesthesia. Of the patients delivered under continuous caudal analgesia 97.4 per cent fall into the blood loss group 0-250 cc. as compared with 79.1 per cent of the patients delivered under inhalation anesthesia.

The duration of the third stage of labor in patients under continuous caudal analgesia and anesthesia has been definitely shortened as compared with the third stage of labor in patients under inhalation anesthesia. There were but 2 instances of a third stage of labor prolonged beyond thirty-one minutes under continuous caudal analgesia and anesthesia as compared with 17 instances under inhalation anesthesia.

The incidence of "trapped" placenta in the 1,000 cases delivered under continuous caudal analgesia was 0.1 per cent. There were 6 instances in which manual removal of the secundines was needed in the inhalation anesthesia group.

The observation that the uterine myometrial bleeding on incision at the time of cesarean section is decidedly diminished.

It is believed that continuous caudal analgesia and anesthesia in obstetrics enables the uterus to approach its normal mechanism more closely.

Systematic Registration of Vital Statistics.—The systematic registration of vital statistics, on which so much of our modern information about public health depends, was begun in the Scandinavian countries. Since 1686 Swedish ecclesiastical law has required the clergy to keep records of marriages, births, deaths and of all persons moving into or leaving the parish, but these records were at first irregular and incomplete. In 1748 the Swedish Riksdag passed a comprehensive law to regulate the recording and compilation of these parish statistics. It also provided for a census. Sweden therefore has an unbroken series of vital statistics dating back to 1749, a unique contribution to public health. In Norway the recording of parish vital statistics was begun in 1735, and the first census was made in 1769.—Haagensen, C. D., and Lloyd, Wyndham E. B.: A Hundred Years of Medicine, New York, Sheridan House, Inc., 1943.

"COLD VACCINES" AND THE INCIDENCE OF THE COMMON COLD

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Since the days of Pasteur the use of bacterial vaccines for the prophylaxis of disease has intrigued physicians and patients alike. In the case of the common cold, efforts to find an effective vaccine have continued in spite of the lack of evidence of a noteworthy immunity following the actual infection. In clinical experience neither the virus of the common cold nor the associated bacterial flora shows significant antigenicity in the majority of men and women.

In view of the large proportion of mankind affected and the present lack of suitable means of protection against epidemic coryza and related respiratory infections, it is understandable that efforts to find an effective vaccine should continue in spite of repeated failures. The leading role of respiratory infections as a cause for absenteeism from work in industry has drawn the attention of physicians to the economic aspect of the problem of such infections.[1] There has been considerable emphasis among industrial groups on the various procedures which held any chance of reducing either the incidence or the severity of colds and their sequelae. Such emphasis during the past two years has been reinforced by a laudable desire to increase the number of working days of a nation in an "all out" war.

The apparent results of efforts to vaccinate against the common cold, the character of the vaccines proposed and the methods of administration show a confusing variability in medical reports. Where suitable controls have been used, "mixed catarrhal" vaccines (orally or by subcutaneous or intradermal injection) have generally failed to show effectiveness in preventing colds in unselected groups.[2] Likewise the bacteria free filtrable virus which has been shown to produce colds under experimental conditions has failed to "vaccinate" in immunization studies.[3] On the other hand, there are numerous reports suggesting from slight to pronounced degrees of protection against the common cold following oral or parenteral administration of vaccine.[4] However, the evidence for concluding that vaccination against the common cold and related respiratory infections is effective is for the most part unimpressive, incomplete and poorly documented.

The lack of unanimity of opinion among those who have conducted experimental trials with various vaccines undoubtedly arises from a number of factors. The common cold is not a clearcut disease entity but rather a symptom complex which may follow irritation of the nose and throat by various chemical and physical agents as well as by infection. There is an element of suggestion affecting the frequency and severity of coryza among any group of persons cooperating in the evaluation of a given form of prevention. The use of placebo medication cannot be avoided if any importance is to be attached to the results reported by the subjects under observation. The common cold is usually diagnosed subjectively. There is no simple objective diagnostic measure for the infection, no ready differentiation of that form of rhinitis from the rhinitis of pollen allergy or other agents. Not all such infections in a large experimental group are seen by the physician making a study of the prophylactic effectiveness of a vaccine.

There are, furthermore, spontaneous fluctuations in the number and severity of colds within a season, from season to season, within a geographic area and from area to area. What is considered a severe cold by one subject is called a mild cold by another. Many trials at experimental prophylaxis depend on reports given from memory by the subjects at the end of a year or at the end of a season. We have discovered that some persons may forget even the occurrence of a cold within a few weeks, to say nothing of its severity or complications. Where the vaccine is to be taken at regular intervals for a period as long as from October to April, the inevitable irregularities and lapses in administration tend to vitiate the results. These and related difficulties in using human cold sufferers as subjects for the assay of a prophylactic procedure must be kept in mind by any one attempting such prophylaxis.

Among industrial workers certain of the variables in the clinical trial of vaccines can be reasonably well controlled. The subjects live under known and frequently comparable working conditions. Their home environment is fairly well known even when not constant throughout a given group. The subjects are available for observation at the plant medical unit as often as is necessary. There are nurses, clerks and other attendants to check in person or by telephone on the occurrence of respiratory infections at weekly, fortnightly or monthly intervals. In addition the record of absenteeism kept by many industrial groups affords a qualified check on absences from all illness and injuries.

EXPERIMENTAL

The data presented here are compiled from the records kept by the medical departments of representative plants and offices participating in an attempt (*a*) to lower the

From the Medical Department, Hercules Powder Company.

1. Lanza, A. J.: Incidence and Costs of Acute Respiratory Disease in Industry, J. A. M. A. **116**: 1342 (March 29) 1941. McGee, Lemuel C., and Creger, J. D.: Gastrointestinal Disease Among Industrial Workers, ibid. **120**: 1367 (Dec. 26) 1942.

2. von Sholly, Anna I., and Park, W. H.: VII. Report on the Prophylactic Vaccination of 1,536 Persons Against Acute Respiratory Diseases, 1919-1920, J. Immunol. **6**: 103 (Jan.) 1921. Topley, W. W. C.; Ferguson, F. R., and Davey, A. F. C.: The Value of Mixed Vaccines in the Prevention of the Common Cold, J. Hyg. **26**: 98 (March) 1927. Sherman, J. B.: Prophylaxis of the Common Cold, Brit. M. J. **2**: 903 (Oct. 29) 1938. Siegel, Morris; Randall, M. G.; Hecker, M. D., and Reid, Mabel: A Study on the Value of Mixed Bacterial "Oral Cold Vaccine," Am. J. M. Sc. **205**: 687 (May) 1943. Diehl, Baker and Cowan.[5] Hauser.[6] Blitch and Doyle.[7]

3. Dochez, A. R.: A Study of Common Cold and Influenza, Tr. Am. Clin. & Climatol. A. **52**: 182, 1936. Dochez, A. R.; Mills, Katherine C., and Kneeland, Yale, Jr.: Filtrable Viruses in Infection of the Upper Respiratory Tract, J. A. M. A. **110**: 177 (Jan. 15) 1938. Powell, H. M.; Sparks, A. L., and Clowes, G. H. A.: Further Inoculation Experiments with the Common Cold Virus, J. Immunol. **38**: 309 (April) 1940.

4. Thomson, D., and Thomson, R.: The Common Cold, Ann. Pickett-Thomson Research Lab. **8**: 1-699 (Dec.) 1932. Rockwell, G. E.; Van Kirk, H. C., and Powell, H. M.: Further Studies on Oral Immunization to Colds, J. Lab. & Clin. Med. **22**: 912 (June) 1937. Strauss,

(Footnote 4 continued in next column)

C. W.: Prophylaxis of the Common Cold, Indust. Med. **8**: 350 (Aug.) 1939. Joiner, Hartwell: Prophylaxis Against the "Common Cold," J. M. A. Georgia **28**: 332 (Aug.) 1939. Stafford, C. I.: The Common Cold: An Evaluation of an Oral Vaccine Leased on a Controlled Study, Journal-Lancet **60**: 319 (July) 1940. Murat, H. S.: Prophylaxis of the Common Cold, Indust. Med. **9**: 482 (Sept.) 1940. Read, Walter W.: Colds and Oral Cold Vaccine, Canad. M. A. J. **41**: 493 (Nov.) 1939. Forgrave, Paul and Forgrave, John: The Common Cold: Prophylaxis by the Oral Route, Indust. Med. **9**: 530 (Oct.) 1940. Hamilton, John R.: Prevention of the Common Cold, Virginia M. Monthly **66**: 139 (March) 1939. Veasey, C. A.: Prophylaxis and Treatment of the Common Cold with Special Reference to Respiratory Vaccine, Ann. Otol., Rhin. & Laryng. **50**: 1168 (Dec.) 1941. Victor, Karl N.: Upper Respiratory Infections: Evaluation of Immunization, Kentucky M. J. **40**: 43 (Feb.) 1942.

amount of lost time from respiratory infections by the use of vaccine and (*b*) to demonstrate the effectiveness of cold vaccines in an unselected industrial population if such effectiveness exists. Our experience with the administration of cold vaccine concerns men and women of ages from 19 to 68 years and covers the October to April period of 1941-42 and 1942-43. Five geographic locations are represented by two eastern plants, a midwestern plant, a group of office workers on the eastern seaboard and a group of office workers in a midwestern city.

The prophylactic medication used included two representative cold vaccines for hypodermic use and three such vaccines for oral use. These vaccines were stock preparations furnished by manufacturing pharmaceutical firms. Control studies included the use of placebos, orally and subcutaneously, as well as an untreated group of employees who cooperated in the experiment by reporting colds while making no specific effort at prophylaxis. Each oral vaccine was administered according to the recommendations of the manufacturer, usually by having the subject take one dose into the empty stomach daily for seven to ten days and then one dose two or three times weekly for the remainder of the cold season. In the case of the hypodermic vaccine, starting with 0.1 cc., gradually increasing doses were given at weekly intervals until a dose of 1 cc. was reached. The latter dose was repeated at either biweekly or monthly intervals throughout the cold season.

Only a limited supply of oral vaccine was issued at one time to a subject, usually enough for two weeks' treatment, never more than enough for a month's treatment. This frequent contact enables the physicians and nurses to check, at frequent intervals, on the actual use of the medication and on the occurrence of acute colds. Additional contacts were made by telephone and by visits of a member of the medical unit to the subject at the latter's place of work when needed to secure information pertinent to the study. No effort was made to use vaccine for treatment of an acute cold. The subjects were instructed to follow their schedule of medication regardless of the appearance of an acute respiratory infection.

Subjects were selected at random for either vaccine or placebo medication in the hope that such aberrant factors as occupation, number of previous colds, exposure and sex would not unduly weight the results for any particular group. In many instances those subjects who received vaccine during the season 1941-42 received the placebo (of the same size and appearance as the vaccine) during the season 1942-43 and vice versa. In each instance the number of colds suffered, the absences from work because of such infections and the severity of the infections (number of days absent due to an infection) were recorded. The reports of those subjects who discontinued the use of or were irregular in taking vaccine have been omitted from the data. No significant differences were noted between the response of subjects from one geographic area and that of subjects from another area. The accompanying table shows a summary of the collective data.

An examination of the average number of colds suffered per person, the number of days lost per person because of these infections and the number of days lost per infection suggests no outstanding value for any vaccine included in this clinical test. By assigning possible significance to slight differences to the arithmetical averages of the various categories shown in the table, one notes the following:

(*a*) The fewest colds developed in groups receiving either Vacagen, Sharp & Dohme vaccine for parenteral use or a placebo by mouth.

(*b*) Groups receiving Oravax, a placebo (orally or hypodermically) or taking no prophylactic medication at all lost fewest days from work because of colds.

(*c*) Groups receiving a placebo hypodermically, Oravax or nothing at all have the mildest infections (measured by the length of absence per acute cold reported).

Summary of Experience with Cold Vaccines (October to April, 1941-42 and 1942-43)

Character of Group	Number of Persons in Group	Number of Colds Reported by Group	Number of Working Days Lost by Group Because of Colds	Number of Colds per Person	Number of Working Days Lost per Person Because of Colds	Number of Days Lost per Cold
Vaccine given subcutaneously (Sharp & Dohme)	288	189	236.5	0.66	0.82	1.25
Vaccine given subcutaneously (Parke-Davis)	94	83	197.5	0.88	2.1	2.38
Placebo given subcutaneously	89	124	42.0	1.39	0.47	0.34
Vacagen	334	217	216.5	0.65	0.65	1.0
Entoral	121	239	111.0	1.98	0.92	0.46
Oravax	198	190	73.5	0.96	0.37	0.39
Placebo given orally	239	165	144.5	0.69	0.60	0.88
Untreated control	228	286	115.0	1.25	0.50	0.40
Totals						
Vaccines given subcutaneously	409	291	453.0	0.71	1.11	1.56
Vaccines given orally	653	646	401.0	0.99	0.61	0.62

In view of the behavior of the control groups, we find no evidence of clearly effective prophylaxis against either the frequency or the severity (including complications) of the common cold from the use of any of the vaccines studied.

Our experience with office and industrial workers thus confirms the findings of Diehl, Baker and Cowan,[5] and of the Hausers[6] for university students and the experience of Blitch and Doyle[7] for military personnel. This is an unfortunate state of affairs in view of the present importance of industrial absenteeism because of acute respiratory infections. We must conclude that there is nothing to recommend the indiscriminate use in industry of any cold vaccine included in this investigation. In fact, any genuine improvement in our situation with the common cold appears to lie in a direction entirely different from that of the vaccine approach.

5. Diehl, H. S.; Baker, A. B., and Cowan, D. W.: Cold Vaccines: An Evaluation Based on a Controlled Study, J. A. M. A. **111:** 1168 (Sept. 24) 1938; Cold Vaccines: A Further Evaluation, ibid. **115:** 593 (Aug. 24) 1940.

6. Hauser, I. J., and Hauser, M. J.: A Controlled Study of "Cold Vaccines," Arch. Otolaryng. **29:** 704 (April) 1939.

7. Blitch, Clifford, G., and Doyle, J. F.: The Efficacy of Cold Vaccine: Investigation Conducted Among Soldiers, Mil. Surgeon **84:** 46 (Jan.) 1939

SUMMARY

1. Three oral vaccines and two vaccines for parenteral administration currently offered as prophylaxis against the common cold were given clinical trials in a group of industrial and office workers during the October to April season of 1941-42 and 1942-43.

2. No clearly evident protection against the cold and related acute respiratory infections can be demonstrated in the results of this clinical trial at mass immunization.

3. The indiscriminate use of cold vaccine now available is not the answer to the problem of industrial absenteeism due to acute respiratory infections.

PRIMARY PULMONARY COCCIDIOIDOMYCOSIS

FOLLOW-UP OF 75 CASES, WITH 10 MORE CASES FROM A NEW ENDEMIC AREA

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The pulmonary infection caused by the fungus Coccidioides immitis is of importance principally to civilian and military doctors in the state of California and of secondary interest to our colleagues in Arizona,[1] New Mexico and West Texas. It should also be of interest to all the medical profession throughout the United States because of the present rapid migration of both military and civilian personnel. The two series presented here represent the largest number of patients any group of authors has been able completely to observe, diagnose and treat. The patients we observed here had the benign, primary, pulmonary form and not the granulomatous type, which Gifford [2] and Dickson [3] proved not to be a disease entity but simply the sequela or result of wide dissemination of the fungus. Our first series [4] of 75 patients developed the disease after a trip to Antelope Plains, Calif.; the second series of patients were exposed in Pallen Pass, which is near the California-Arizona border. Careful clinical histories were taken of the 10 patients in our second series and it was found in each instance that the patient had been at Pallen Pass fourteen to twenty-one days previously. There was no exception to this statement, and we believe that this is a new endemic area in California. The terrain in the two areas is essentially the same, having a 3 inch fine top sand, which is an excellent medium for the chlamydospores of the fungus [5] in the vegetative phase. It is by means of this dust in the air that the fungus is readily transported and so inhaled into the lungs. Most of the inhabitants of these areas usually, unknowingly, have their primary infection during the first year of residence and are subsequently immune. A few of these develop clinical symptoms and a certain number manifest a greater allergic response such as erythema nodosum. This is colloquially called "valley fever," "desert fever" or "desert rheumatism." The more pronounced form that we have encountered in our two series of cases is known as primary pulmonary coccidioidomycosis.

Primary pulmonary coccidioidomycosis has a high morbidity and a low mortality, and this fact is again borne out by the original series of 75 patients. All of these have returned to duty. Cavity formation occurred in 3 of the patients. This has been observed and reported previously.[6] Two of the patients had multiple cavities that closed spontaneously after a period of three to five months and they were reclassified and returned to continental noncombat duty. The third patient had two cavities, one of which persisted despite regression of the other pulmonary lesions and the hilar adenopathy. The latter cavity did not change in size or shape over a period of six months and the patient was therefore sent to a general hospital. He was later sent to continental noncombat service, presumably the lesion having healed. Apparently all 3 have done this type of duty in a satisfactory manner.

The initial infection was manifested in 3 instances by primary pleuritic effusion no different from that often seen in pulmonary tuberculosis with the exception that Coccidioides immitis may be recovered from the pleural fluid and serologic tests are often positive. Two of these patients returned to full field duty in three to five months. The third patient in addition had pneumonic consolidation and developed two verrucous granulomas of the skin. This circumstance was of particular interest for many reasons. First, because the blood precipitin and complement fixation tests done by Dr. C. E. Smith at Stanford University School of Medicine showed that the disease was disseminating and that the patient, therefore, should be developing granuloma. This occurred as predicted. Second, during the critical stage of this patient's illness, while he was in an oxygen tent and the prognosis was grave, he was given whole blood from 1 of the convalescent patients whose blood was of high precipitin titer without complement fixation titer. Immediately after the second transfusion his temperature dropped to 100 F. and remained below that level until final discharge from the hospital. Third, sulfadiazine and sulfanilamide were used separately during the stage of acute pneumonic consolidation and proved to be of no value. Fourth, this patient is an American Indian, the only one in our series, which emphasizes the fact that dark skinned people are more likely to have severe infections and to develop sequelae or dissemination. And last, although there was no precedent noted in the literature, the granulomas were removed surgically with wide excision, and there has been no sinus formation nor recurrence. He was reclassified and returned to continental noncombat duty, which he has capably performed.

Except for these 6 patients, all of this series have returned to full field duty.

CLINICAL PATHOLOGY

Primary pulmonary coccidioidomycosis is an acute infectious disease caused by inhalation of the fungus Coccidioides immitis. The coccidioidal granuloma was first described by Wernicke [7] and Posodas about 1892 in Argentina, but in 1937 it was recognized by Dickson [8]

From the Station Hospital, Camp San Luis Obispo, California.

1. Farness, O. J.: Coccidioidomycosis, J. A. M. A. **116:** 1749-1752 (April 19) 1941.
2. Dickson, E. C., and Gifford Myrnie A.: Coccidioides Infection (Coccidioidomycosis), Arch. Int. Med. **62:** 853-877 (Nov.) 1938.
3. Dickson, E. C.: Valley Fever, California & West. Med. **47:** 151-155 (Sept.) 1937.
4. Goldstein, D. M., and Louie, Stanley: Primary Pulmonary Coccidioidomycosis, War Med. **4:** 299-317 (Sept.) 1943.
5. David, B. L., Jr.; Smith, R. T., and Smith, C. E.: An Epidemic of Coccidioidal Infection (Coccidioidomycosis), J. A. M. A. **118:** 1182-1186 (April 4) 1942.
6. Powers, R. A., and Starks, D. J.: Acute (Primary) Coccidioidomycosis: Roentgen Findings in a Group "Epidemic," Radiology **37:** 448-453 (Oct.) 1941.
7. Wernicke, R.: Ueber einen Protozoenbefund bei Mycosis fungoides, Centralbl. f. Bakt. **12:** 859, 1892.
8. Dickson, E. C.: Coccidioides Infection, Arch. Int. Med. **59:** 1920-1944 (June) 1937.

to be the sequela or product of dissemination of the benign primary form we describe here rather than a disease entity in itself as was previously thought. Cronkite and Lack[9] in conditioned inhalation experiments with guinea pigs have attempted to present a microscopic study of the primary disease by experimentally infecting 42 per cent of 72 guinea pigs. This work was accomplished by allowing the animals to inhale the chlamydospores. The primary pulmonary infection appeared after eight to twenty-one days; it consisted of an area of small grayish nodules, each varying up to 5 mm. in diameter, which grossly resembled the lesions of miliary tuberculosis. Microscopically they appeared as granulomas, showing slight alveolar exudate but with involvement of the interstitial spaces. However, the older lesions became fibrous as the exudate was replaced by giant cells, mononuclear cells and epithelioid cells. Microscopic studies of the primary disease in our series are not available. Caldwell,[10] on autopsies of the lungs of patients dying from coccidioidal granuloma elsewhere in the body, showed lesions of a similar nature.

Skin Manifestations

Patient with Rash	Days from Onset to Eruption	Maximum Percentage Eosinophilia	Coccidioidin Skin Test, No. Mm. Erythema 48 Hr. 1:1,000	1:100	Tuberculin Patch Test
1	16	10	20	55	—
2	23	2	10	50	+
3	18	2	15	50	+
4	7	12	20	60	—
5	10	22	25	40	—
6	12	4	10	40	—
7	14	7	25	40	+
8	33	2	10	10	+
9	38	1	15	35	—
10	3	8	20	40	+
11	8	2	3	14	+
12	14	10	15	60	+
13	5	10	18	45	—
14	6	9	5	25	—
15*	12	6	40	70	—
16*	9	0	12	45	—
17*	11	6	30	75	+
18	8	7	25	50	+
19†	12	8	15	35	—
20†	14	3	20	45	—
21†	7	1	15	30	—
22†	10	2	10	30	—
23	21	1	10	20	—

No symbol, erythema nodosum; * erythema multiforme; † morbilliform rash.

Coccidioidal granuloma has a mortality of 50 to 60 per cent.[11] It is characterized by intrapulmonary or extrapulmonary papular lesions which result in necrotic formation. The incidence of development of granuloma following the acute primary pulmonary infection is not definitely established; most authors agree that it is uncommon. Granulomas have been found in the lungs, skin, bone and brain. Although meningitis did not occur in our series, it is not infrequent. We had one example of granulomas of the skin.

CLINICAL SIGNS AND SYMPTOMS

Primary pulmonary coccidioidomycosis is not difficult to recognize if it is included in the differential diagnosis. This is especially true if the patient gives a history of residence in an endemic area. Also one should always consider this condition if a patient suspected of having pulmonary tuberculosis[12] continually has negative sputum.

We have combined clinical and laboratory data from the two series in an attempt to give a better understanding of this infection, since it has assumed much greater importance than the medical profession had anticipated. There was only one manifestation, namely morbilliform rash, occurring in the second series of 10 that were not seen in the first group. We were impressed by the mildness of the disease in the second group, and this suggested that the fungus might be less virulent in different endemic areas.

1. *Thoracic Pain.*—This was an early and prominent symptom occurring in 88 per cent of the patients. The pain was always accentuated by cough and deep inspiration. In the majority of instances the pain was bilateral and persisted after other symptoms had disappeared.

2. *Cough.*—This symptom was present in 88 per cent of the patients, and these patients stated that fine particles of dust or sand were present in the sputum. The cough was moderately productive in 65 per cent. Hemoptysis[13] was present in 18 per cent, but it had no correlation with the severity of the disease or the type of pathologic condition of the lung.

3. *Chills and Fever.*—Chills were a frequent symptom experienced by 66 per cent of the patients. The duration of the chill was from a few minutes to an hour, and this recurred during a period of four days in some cases.

Fever was a constant finding. The temperature ranged from 98.8 to 104 F., but only 5 patients had a temperature over 102 F. Afternoon temperature continued elevated into the second and third months of hospitalization in a few instances.

4. *Sore Throat.*—This was noted in 37 per cent of the patients and was usually described as slight. In these cases only 11 or 12 per cent had definite tonsillitis or pharyngitis.

5. *Examination of the Chest.*—Physical signs were present in only 26 per cent of the series. The most common description was "harsh, rough breath sounds." Rales were infrequent; classic signs of consolidation and effusion were present in several cases.

6. *Cutaneous Manifestations.*—The incubation period was one to three weeks and the cutaneous manifestations occurred eight to fourteen days later, as shown in the table. In our first series of 75 patients erythema nodosum occurred in 19 per cent, erythema multiforme occurred in 2.6 per cent, while 1 patient had both types of erythema. Erythema nodosum has been previously reported by other authors in 2 to 5 per cent[14] of their patients.

In our recent series of 10 patients a morbilliform rash was occasionally noted. It was confined to the trunk and lower extremities and was present in 40 per cent. A few authors have stressed the relationship of skin manifestations to eosinophilia; this is only slightly evident in our cases, as shown in the table.

9. Cronkite, A. E., and Lack, A. R.: Primary Pulmonary Coccidioidomycosis, J. Exper. Med. **72:** 167-174 (Aug.) 1940.

10. Caldwell, George T.: Secondary (Granulomatous) Coccidioidomycosis—Coccidioidal Granuloma, Texas State J. Med. **38:** 376-382 (Oct.) 1942.

11. Carter, Ray: Roentgen Diagnosis of Fungus Infections of the Lungs with a Special Reference to Coccidioidomycosis, Radiology **38:** 649-659 (June) 1942.

12. Winn, W. A., and Johnson, G. H.: Primary Coccidioidomycosis: A Roentgenographic Study of Forty Cases, Ann. Int. Med. **17:** 407-422 (Sept.) 1942.

13. Winn, W. A.: The Treatment of Pulmonary Cavitation Due to Coccidioidal Infection, California & West. Med. **57:** 45-47 (July) 1942.

14. Smith, C. E.: Epidemiology of Acute Coccidioidomycosis with Erythema Nosodum ("San Joaquin" or "Valley Fever"), Am. J. Pub. Health **30:** 600-611 (June) 1940.

7. Arthralgia.—It was found that 28 per cent of the patients complained of aches or pains in the joints during the course of the disease. The pain was dull and usually localized in the lumbar spine or lower extremities. There was no local swelling nor tenderness of the joints, and roentgenograms were negative.

LABORATORY AIDS AND SKIN TESTS

1. *White Blood Cell Count and Differential.*—The white blood cell count was found to be of little diagnostic value; the counts ranged from normal to 29,000 cells and averaged about 11,000 cells. The eosinophilia, which some authors felt was diagnostic, was at its peak in the second or third week, averaging 6 to 8 per cent, as shown in the table.

2. *Sedimentation Rate.*—The modified Cutler method with a normal value of 10 mm. in sixty minutes was employed. On admission, nearly all patients had an elevated sedimentation rate; the range varied up to 56 mm. in sixty minutes. On discharge to duty all patients had a sedimentation rate less than 15 mm. in sixty minutes.

3. *Weltmann Test.*—This is a test described earlier and recently revised which we have employed in conjunction with the sedimentation rate. It was brought back into use because of its value in pulmonary tuberculosis, since it is believed to show proliferation of cells and therefore activity which may not be evident in temperature charts or sedimentation rates. Because of the similarity of this disease and pulmonary tuberculosis, we felt that it might be of some value. A detailed report cannot be given in this paper; but in many instances when the patients still had complaints in spite of an afebrile course and a normal sedimentation rate, the Weltmann band was found to be high, showing evidence of proliferative activity. The latter circumstance was the basis for further hospitalization.

4. *Tuberculin Patch Test.*—The parallelism between pulmonary tuberculosis and pulmonary coccidioidomycosis has been stressed by many authors, notably Smith.[15] For this reason all patients were tested by the tuberculin skin test; the method employed was the Vollmer patch test. Of the 85 patients 42 per cent gave a positive test while 58 per cent gave a negative reaction. Six samples of sputum were obtained from each patient and examined for the presence of tubercle bacilli. In no instance was any acid fast organism found. The percentage of positive patch tests in this series would be equal to that found in the general population, as shown in the table.

5. *Coccidioidin Skin Test.*—This test is of great value in the diagnosis of coccidioidomycosis. A negative test usually excludes the possibility of infection, whereas a positive test is indicative of past or present infection. Coccidioidin as prepared by Smith was used, and 0.1 cc. dilution of 1:100 and 1:1,000 was injected intracutaneously by means of new tuberculin syringes and small gage needles. The control was 0.1 cc. of 1:10 dilution of the Bureau of Animal Industry synthetic medium injected in a similar manner. Readings were made at twenty-four, forty-eight and seventy-two hours and the results recorded in millimeters of erythema and induration. Reactions of 5 mm. or more at forty-eight hours were considered positive (fig. 1). All of the 85 patients gave positive reactions. It is our impression that the reactions were most pronounced at forty-eight hours, as shown in the table. In the entire series only one untoward reaction was noted. This patient developed a lymphangitis and axillary lymphadenopathy following a very strong allergic response. Erythema nodosum did not occur in any of our cases as the result of the coccidioidin skin test, although this has been reported by Kessel.[16]

6. *Blood Precipitin and Complement Fixation Tests.*—Serologic tests were performed on all patients by Dr. C. E. Smith and Miss R. J. Wheatlake. In many instances sputum cultures were also done. It is the opinion of Dr. Smith that a positive serologic test is diagnostic but that a negative test does not necessarily exclude the infection, since humoral antibodies may rapidly disappear. When dissemination of the granuloma occurs the complement fixation titer is high and the precipitin titer is low. On the other hand, primary infections show a high precipitin titer and a low or absent complement fixation titer. Thus the serologic tests possess a prognostic as well as diagnostic value.

Fig. 1.—Positive coccidioidin skin test at optimum time of reading, forty-eight hours.

7. *Sputum.*—Six sputums from each patient were examined for acid fast bacilli. It is our opinion that examination for the double refractive bodies of the fungus on smear is too inaccurate to be of value. This opinion is also shared by Dr. Smith.[15] However, posi-

15. Smith, C. E.: Parallelism of Coccidioidal and Tuberculous Infections, Radiology **38**: 643-648 (June) 1942.

16. Kessel, J. F.: The Coccidioidin Skin Test, Am. J. Trop. Med. **19**: 199-204 (March) 1939.

tive sputum cultures were often obtained by inoculation on Sabouraud's medium, but owing to the danger of infection even by experienced laboratory personnel we believe this diagnostic procedure should be limited to otherwise undiagnosed cases.

8. *Roentgenology.*—Serial roentgenograms of the chest were taken of all patients as long as activity by x-ray could be demonstrated and if the clinical course warranted.

It is not our intention to discuss fully the radiographic findings of this disease. We may state briefly that there are no typical roentgenologic findings, but among our 85 patients the more common report stated "The hilar shadows are enlarged on one or both sides, associated with increased bronchovascular markings extending into the parenchyma of the involved regions."[17] Most of the roentgenograms showed gradual clearing in the ensuing weeks. A slightly increased hilar shadow may persist for several months with no other clinical or laboratory evidence of disease, and these patients may be returned to duty if no other signs of activity are present.

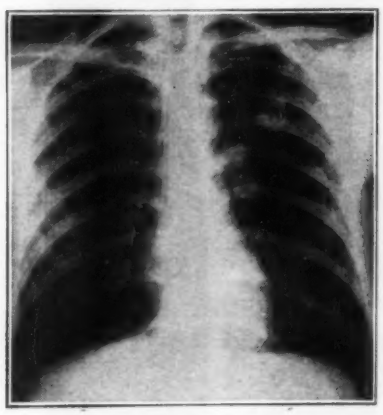

Fig. 2.—Thin walled cavity with a small amount of peripheral reaction present in the left upper lobe. The persistence of this cystlike cavity was due to bronchostenosis with ball valve pressure effects.

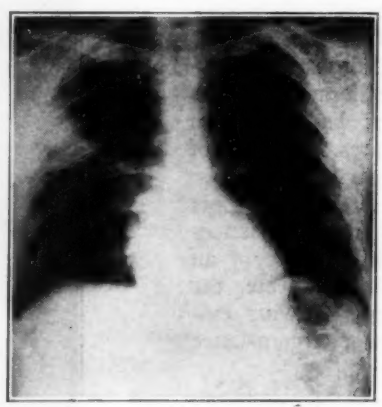

Fig. 3.—Peripheral lobular exudative-infiltrative lesion. Associated regional pleuritis cleared fairly rapidly, but parenchymal lesion resolution was characteristically slow.

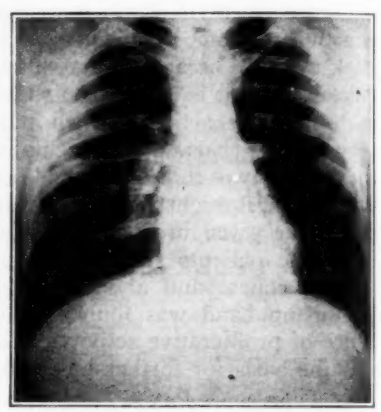

Fig. 4.—Strong right hilar shadow prominence and confluence with extension of infiltrates into lower lung field. Resembles bronchopneumonia except for delayed resolution.

We have selected certain roentgenograms from our series of cases as illustrative of important roentgenographic aspects of the primary infection (figs. 2, 3 and 4).

Roentgenology is of paramount importance in diagnosing certain sequelae. Cavity formation occurred in 3 of our patients, and initial infection was manifested in 3 other cases by primary pleuritic effusion. These cases with their radiographic progress were more fully discussed at the beginning of this paper.

Bronchopneumonic consolidation of lobar distribution was seen not infrequently and usually regressed in a few weeks.

TREATMENT

The mode of therapy parallels [15] closely that of tuberculosis, usually without pneumothorax or surgical intervention. In our series we found pneumothorax unnecessary, but Winn [18] has reported favorable results in cases of cavitation with persistent hemoptysis. This infection does not pass directly from host to host; therefore patients cannot be considered a menace to society even though sputum contains the endospores or spherules. Only the chlamydospores found in the desert dust or sand are infectious to nonimmune persons.

We concur with others that symptomatic conservative treatment is the method of choice, emphasis being placed on bed rest, adequate fluids, high caloric high vitamin diet and sedatives. Salicylates and iodides have been found to be advantageous for the relief of arthralgia.

Convalescent blood with high precipitin titer was obtained from 2 donors and used to transfuse 2 patients who were critically ill with pulmonary consolidation and effusion. Both of these patients demonstrated immediate clinical improvement. Evaluation of this type of therapy cannot be deduced from these 2 isolated instances.

As previously stated, the 2 verrucous granulomas of the skin were treated by surgery with wide excision. The wounds healed slowly and completely without sinus formation, and there was no recurrence. This treatment has apparently never previously been used, so we offer no further comment on this 1 case.

Sulfonamides were given in various phases of the disease and were found to be of no value.[19]

The criteria for discharge from the hospital were a sedimentation rate of 15 mm. or less in sixty minutes and a Weltmann test showing a normal band.

COMMENT

In our 85 cases of primary pulmonary coccidioidomycosis no deaths occurred. Two coccidioidal verrucous granulomatous skin lesions developed on 1 patient, 1 lesion on the scalp and the other on the shoulder; both were removed surgically, and sections of the tissue confirmed the diagnosis. The wounds healed slowly with no recurrence. This secondary manifestation of coccidioidomycosis seldom occurs and when present is pro-

17. Colburn, J. R.: Roentgenological Types of Pulmonary Lesions of Primary Pulmonary Coccidioidomycosis, unpublished data.

18. Winn, W. A.: Pulmonary Cavitation Associated with Coccidioidal Infection, Arch. Int. Med. **68**: 1179-1214 (Dec.) 1941.

19. Sulfanilamide and sulfadiazine were used without any therapeutic benefit. H. C. Hinshaw reported at a Mayo staff meeting that promin gives promise in the treatment of pulmonary tuberculosis. We have also seen recovery occur in 1 case of tuberculous meningitis, and the only drug used was Parke-Davis M. 12. Considering the clinical similarity of the two diseases, although the cause of one is a bacillus and the other a fungus, it is suggested that these drugs may be of value. W. E. Herrell at the Mayo Clinic stated that penicillin in a dilution as small as 1 to 1 million is highly effective in the treatment of actinomycosis. However, penicillin has recently been used on the granulomas of coccidioidomycosis without therapeutic effect. We have no basis for comment as to whether it would be of value in the acutely ill primary infection or the disseminating phase of the latter disease.

duced by dissemination of the disease through the blood or lymph stream from the primary pulmonary infection. Dissemination of the disease from its primary focus in the body is uncommon and most authors agree that this occurs in about 0.05 per cent of cases.

In the series of 75 patients 3 developed pulmonary cavitation and 3 developed pleural effusion. Fortunately these 6 pulmonary lesions occurred early in the course of the disease, which is characteristic of primary, focalized coccidioidomycosis in contrast to the same types of lesions in tuberculosis which occur late, usually as a result of endogenous reinfection. It is generally conceded and was evident in these patients that once the infection is cured completely the healing is permanent. Some authors have assumed that reinfection may be endogenous; however, we believe that cure was not complete in those instances in which reinfection was predicated. It appears obvious to us that there are many individuals in whom only the allergy caused by infection is produced; in these instances the subclinical course is asymptomatic.

SUMMARY

1. In the follow-up study of 75 patients with primary pulmonary coccidioidomycosis, all patients returned to full duty in three to five months except 6, who were reclassified to continental noncombat duty in eight months. One of these had pneumonic consolidation with effusion and 2 verrucous granulomatous skin lesions; another had 2 pulmonic parenchymal cavities.

2. Ten more cases were reported from a new endemic area in the state of California; 4 of these showed morbilliform skin manifestation. These patients appeared to have had a milder infection, and all will be returned to duty with a maximum of three months' hospitalization.

3. Erythema nodosum has been previously reported to occur in 2 to 5 per cent of all cases; however, in our 85 cases it appeared in 19 per cent.

4. Coccidioides immitis exists in the vegetative phase as chlamydospores, which are in the soil in parts of the desert sections of the states of California, Arizona, New Mexico and West Texas. Here the fungus may be inhaled from the dust and pulmonary infections follow. Infection does not pass from host to host, and therefore patients are not a menace to society.

5. This infection should be considered in a differential diagnosis if a history of residence in an endemic area is obtained or a suspected tuberculous patient has negative sputums.

6. When cure has been complete, reinfection does not occur.

7. Many subclinical cases occur in which only allergy is produced without clinical manifestations.

8. There is relatively little mortality to primary pulmonary coccidioidomycosis, but the morbidity is high.

9. Sulfonamide chemotherapy was given in various phases of the disease and was found to be of no value.

10. Two acutely ill patients who were treated with high precipitin titer convalescent blood had almost immediate improvement. Two verrucous skin granulomas were widely excised; there were no complications nor recurrence. These are new therapeutic procedures, and therefore no claims will be made on so limited clinical material.

PAROXYSMAL ABDOMINAL PAIN

A FORM OF FOCAL SYMPTOMATIC EPILEPSY

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PHILADELPHIA

Auras of somatic and visceral sensibility are commonly experienced as part of the epileptic sequence of events, and their divers varieties have been fully described in a prolific literature on the subject. The "sensory march" of the jacksonian fit and the variegated epigastric aura represent the sensory component of what may or may not terminate in the motor expression of the epileptic attack. These sensory manifestations may include the element of pain, but usually they are not confined to a single somatic segment or focal visceral area. Localized pain, as an isolated phenomenon not associated with somatic convulsive seizures or with other motor, sensory or psychic variants of epilepsy would rarely be considered a form of epilepsy even though its occurrence was episodic and paroxysmal. However, it was conjectured prophetically without benefit of electroencephalography by Wilson [1] in 1928.

The frequency with which unexplained abdominal pain occurs both in children and in young adults makes it advisable that all available methods be utilized in arriving at a differential diagnosis. This is particularly important in that such persons may be subjected to unnecessary operations and suffer on because of continued negative findings after intensive study and then are thrown into the diagnostic discard as hysterical or psychoneurotic.

The person who forms the subject of this report had isolated paroxysmal abdominal pain coming on at irregular intervals over a period of twenty-nine years. Extensive studies had failed to reveal organic abdominal visceral disease and medication had afforded no relief prior to the use of anticonvulsant drugs. Electroencephalography showed abnormal waves particularly in the right and left frontal lobes.

REPORT OF CASE

History.—P. P., a man aged 32, was referred by Dr. Marcel Sussman on June 4, 1941 offering as the chief complaint periodic attacks of cramplike pain involving the entire abdomen. The pain often started in the lower right quadrant and then involved the abdomen throughout. At times the pain became so severe as to produce prostration and loss of weight. Despite the severity of the attacks, he did not experience nausea and did not vomit. During the attack he had a "rumbling" sensation in the abdomen associated with considerable eructation. The seizures were not accompanied by headache or visual disturbances. He had never had diarrhea during a spell. Following the attack he was exhausted and felt "achy all over." He had never been aware of premonitory symptoms which might constitute an aura. The attacks lasted two hours or more, during which time the pain was constant and unremitting. Abdominal pain had on occasion endured for two days. During recent months the attacks occurred every seven or eight days and he had four seizures during the preceding week.

The first attack occurred at the age of 9 months. Shortly before this he had had diphtheria and had received antitoxin. The seizures of abdominal pain came on at irregular intervals during his early life and appeared more frequently during stages in his life when he was subjected to nervous stresses.

From the Doctors Hospital, Philadelphia.
Read before the Philadelphia Neurological Society, Nov. 26, 1943.

1. Wilson, S. A. K.: Epileptic Variants, J. Neurol. & Psychopath. **8**: 223, 1927-1928; Modern Problems in Neurology, London, Edward Arnold & Co., 1928.

For example he invariably suffered a severe attack during examinations at school, and thereafter the attacks would cease for a considerable time. The longest attack free interval was fourteen months, following his graduation from college. At the age of 8 an appendectomy was performed during one of the attacks and a normal appendix was removed. Until three years before admission he had urticaria after eating certain foods, especially watermelon. At the age of 16 he cut himself with a piece of glass, and an attending physician administered antitetanus serum. Almost immediately after the injection he became extremely ill and had one of his usual attacks. For two days he had urticaria and a high fever.

He had been studied extensively and intensively in many hospitals and clinics without any definite etiologic factor being unearthed. The only positive findings of significance were extensive pyorrhea and apical abscesses involving several teeth, and tests for allergens, which showed a possible allergic background. At one clinic the findings of extensive studies were negative; however, an abdominal exploration was suggested but not urged. Here it was felt that there seemed to be quite a pronounced nervous element in the patient's makeup and in his condition during some of his acute attacks. The diagnoses which had been entertained during the past years were (1) hysteria, (2) abdominal angioneurotic edema, (3) abdominal migraine, (4) psychogenic functional gastrointestinal disorder, (5) hepatobiliary disease, (6) enlarged colon, (7) Dietl's crisis and (8) diaphragmatic hernia. He received various forms of medication, including ergotamine tartrate, but obtained no lasting relief.

Both parents were living, the father being 56 and the mother 50 years of age. The patient was an only child and, as the result of his persistent illness since the age of 9 months, his parents had been unduly solicitous and had watched his every move. The mother was a highly emotional person, who during the patient's attacks also became ill and between seizures manifested anxiety in anticipation of her son's next attack. The patient had been married six years. His wife was 26, well, and had had no pregnancies.

Physical Findings.—At the time of the first examination the patient was apprehensive and showed concern regarding his illness, especially since he had just returned from an exhaustive study at a diagnostic clinic where no suggestions for relief were made other than an abdominal exploratory operation. Examination of the cranial nerves showed no abnormalities. There was no disturbance of the motor dynamics in the upper and lower limbs. The tendon reflex activity was normal throughout, and pathologic reflexes could not be

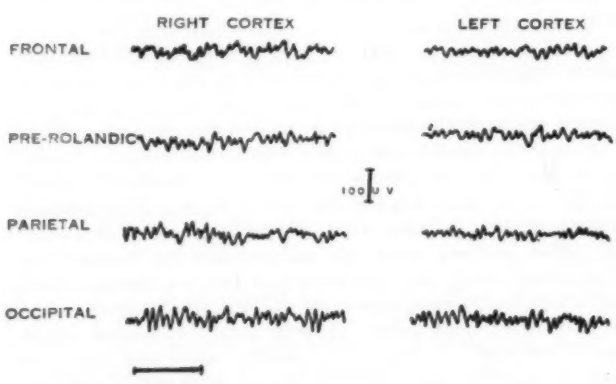

Fig. 1.—Electroencephalogram June 9, 1941, before taking medication. Note the low voltage three per second abnormal waves particularly in the right and left frontal cortex. They are present to a lesser extent in the parietal and occipital areas. This abnormal activity was increased with hyperventilation.

brought out. Coordination was not impaired, and there was no disturbance of cerebellar function. Sensation was intact throughout the body in all modalities. The Romberg maneuver was normally carried out, and the station and gait were normal. Meningeal signs could not be elicited. The examination of the chest and abdomen failed to show any evidence of visceral defects.

Laboratory studies showed essentially normal findings as regards blood cells, chemistry and serologic reaction and urinalysis. Previous x-ray studies of the gastrointestinal tract, gallbladder and urinary tract were negative. The blood pressure was 102 systolic, 68 diastolic; the pulse rate was 76, the weight 139½ pounds (63 Kg.).

In view of the periodicity of the abdominal seizures and the complete absence of any specific etiologic factor as well

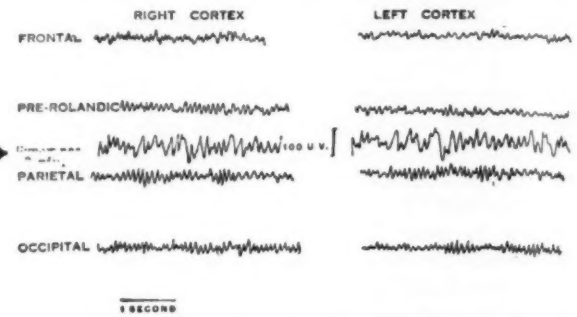

Fig. 2.—Electroencephalogram Dec. 3, 1941, patient receiving anticonvulsant medication. The cerebral potentials throughout both hemispheres are within normal limits as to amplitude and rhythm. An occasional abnormal sharp wave is seen. After hyperventilation, denoted by arrow, however, large slow abnormal waves are detected in both frontal lobes.

as his failure to respond to antimigrainous drugs, it was thought advisable to have electroencephalography carried out to determine whether this might be a form of abdominal epilepsy. This was done on June 9 by Dr. Joseph Hughes, who reported that there were low voltage abnormal waves seen particularly in the right and left frontal regions. They were also present, however, in the parietal and occipital lobes. This abnormal activity was increased with hyperventilation. The patient had a cerebral dysrhythmia minimal in degree. About 1 to 2 per cent of individuals might show a response of this degree. Its significance must be estimated clinically (figs. 1 and 2).

Course.—On June 13 medication was started consisting of phenytoin sodium 1½ grains (0.1 Gm.) twice daily and a mild bromide mixture 1 fluid drachm (4 cc.) four times daily. He remained attack free until Jan. 3, 1942, a period of over seven and a half months. On Dec. 5, 1941 I had instructed him to stop medication to learn if the phenytoin sodium was acting as an anticonvulsant or merely by suggestion. The seizure on January 3 was of the usual variety and required morphine sulfate to terminate it. Medication was resumed on the following day, and he remained attack free until July 16, 1942. In order to eliminate the element of suggestion as the effective therapeutic agent in controlling the attacks it was arranged to replace the phenytoin sodium with lactose in the phenytoin capsules without the patient's knowledge. This was done on July 1, 1942 and the seizure occurred fifteen days later. The patient was terribly alarmed, believing the phenytoin was no longer effective, but when told about the experiment he was gratifyingly reassured. His weight had gone from 139½ to 163 pounds (from 60 to 74 Kg.). He has remained attack free during the past fifteen months, during which time he has been receiving phenytoin sodium 1½ grains twice daily. The bromide mixture has been taken irregularly.

COMMENT

The diagnostic problem presented by this patient, after years of intensive study with essentially negative results other than suggestive positive reactions to allergens and abscessed teeth, the latter certainly not a factor since the age of nine months, lay in the consideration of such conditions as an allergic diathesis, abdominal migraine or a conditioned functional disorder of psychogenic origin. The latter offers the objection of stretching psychosomatic concepts beyond credulity in the light of the age at onset of symptoms and the subsequent history. The possibility of an allergic background

warranted real consideration because of his urticarial reaction to injected serum and the ingestion of watermelon. Dietary regimens failed to prevent seizures, however. Abdominal migraine usually is associated with or alternates with other migrainous phenomena such as hemicrania preceding or following the attack of abdominal pain, visual disturbances, nausea, vomiting and diarrhea. None of these occurred in this patient. Moreover the use of ergotamine tartrate was ineffectual, although this cannot be considered conclusive evidence against the diagnosis of a migrainous state. These three conditions had been considered prior to this study, and the objections offered here led to the examination of a more likely diagnosis.

The sudden explosive onset of the abdominal pain at irregular periods over twenty-nine years and the sameness of the pattern suggested a form of focal symptomatic epilepsy. It will be noted in the history that the first attack came on after a siege of diphtheria and the use of diphtheria antitoxin at that time. His severe reaction later in life to an injection of antitetanus serum with urticaria and the usual attack of abdominal pain would warrant the conjecture that he had had cerebral angioneurotic edema with injury or sensitization of the brain following the use of diphtheria antitoxin at 9 months of age. This has been shown experimentally by Dechaume and Croizat,[2] who produced serum shock in animals and found congestive, hemorrhagic and degenerative changes in the brain. Bassoe [3] reported a case in which a woman developed aphasia, hemiplegia, hemianopsia and convulsive seizures following the injection of serum. An exploratory craniotomy, performed because brain abscess was suspected, revealed dark, hyperemic and soft brain tissue in the explored area. The latter was considered due to a focal angioneurotic edema.

The electroencephalographic findings shown in figure 1 of low amplitude three per second waves especially in both frontal lobes and to a lesser extent in the parietal and occipital lobes is suggestive evidence, in an adult, of an underlying disturbed cortex. Considerable experimental and clinical evidence now exists —Bechterew,[4] Watts and Fulton,[5] Spiegel, Weston and Oppenheimer,[6] Penfield and Erickson [7]—indicating that frontal lobe lesions may produce disturbances of motility of the gastrointestinal tract. Fulton states that "the gastrointestinal aura, which occurs in cases of localized epilepsy, coincides with vigorous and abnormal gastrointestinal movements; they are initiated focally in the cortex by the irritating agent responsible for the subsequent epileptic seizure." There is still some question regarding cortical localization of gastrointestinal representation. Fulton and his co-workers [8] believe that the premotor area (area 6 of Brodmann) is chiefly concerned in influencing gastrointestinal activity but that areas 3 and 5 also exert some influence on the bowel. Spiegel [6] demonstrated that "in acute experiments on dogs the gastrointestinal tract could be influenced not only from premotor area 6 but also from foci in a postmotor region (areas 5 or 3 respectively)." It is interesting, as shown in figure 2, that the electroencephalographic tracings, with the patient under medication, during hyperpnea revealed slow abnormal waves confined to the frontal lobes.

Lambert [9] reviewed the records of over 200 children who presented the chief complaint of abdominal pain and "revealed that in a fourth of them there were no concomitant signs or symptoms of organic disease"; 3 of the children with a history of convulsions showed "marked paroxysmal dysrhythmias in keeping with the clinical diagnosis of convulsive disorder" in the electroencephalograms. Petit mal patterns were seen in the electroencephalograms of two other children, and seven other electroencephalograms showed some degree of dysrhythmia. Klingman and his associates [10] studied 12 children, 3 to 12 years of age, who had unexplained attacks of paroxysmal abdominal pain. Nine of these children showed at some time the additional manifestations of the convulsive state. In all, the electroencephalographic findings were suggestive of cerebral dysrhythmia, mostly of the "psychomotor equivalent" pattern, and on hyperventilation the abnormalities were decidedly increased. These investigators believed that these abnormal patterns "were beyond what might be reasonably expected in younger children."

The satisfactory response to anticonvulsant medication in the case presented here, and the return of seizures following withdrawal of phenytoin sodium, are empirical evidence of the nature of the disorder. The restoration of alpha activity throughout the cortex under anticonvulsant therapy as shown in the electroencephalograms (fig. 2) except under conditions of hyperventilation, when delta activity can be seen, is graphic representation that a direct relationship exists in this patient between the occurrence of abnormal cerebral electrical patterns and the attacks of paroxysmal abdominal pain.

SUMMARY

A man aged 32 had irregular attacks of isolated paroxysmal abdominal pain over a period of twenty-nine years which began at the age of 9 months. Electroencephalographic studies revealed abnormal slow waves particularly over both frontal lobes. Anticonvulsant therapy (phenytoin sodium and bromides) brought about a cessation of the seizures and restored the alpha activity to the electroencephalographic tracings. The explanation offered as to the possible etiologic basis for the localized epileptic disturbance, expressed by abdominal pain, is that the cerebral cortex, especially the frontal lobes, was injured or sensitized by the injection of serum when the patient was 9 months of age, producing a cerebral angioneurotic edema, and the altered brain tissue becoming the seat of abnormal electrical discharges.

1813 Delancey Street.

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ABILITY OF DIFFERENT TYPES OF HEMOLYTIC STREPTOCOCCI TO PRODUCE SCARLET FEVER

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Whether certain strains of hemolytic streptococci are more likely to produce scarlet fever than others has been debated for many years. Since the development of methods for the serologic separation of the hemolytic streptococci, the following facts bearing on the problem have been established:

(*a*) All the known Griffith types[1] have been reported to have produced scarlet fever at one time or another.[2]

(*b*) Keogh and his co-workers[3] in Melbourne found that type 6 apparently failed to produce scarlatiniform rashes in children, though it was capable of producing enough antitoxic immunity in some children to prevent their developing rashes when they were later infected with a known rash producing type.

(*c*) Neisser[4] has reported that Griffith type 25 failed to produce scarlet fever in Dick positive persons and stated that this type rarely produces scarlet fever.

(*d*) In a study of strains of hemolytic streptococci from various sources, Keefer, Rantz, Shuman and Rammelkamp[5] found suggestive evidence that certain types, e. g. 13, were more likely to produce scarlet fever than other types.

(*e*) Certain strains of hemolytic streptococci produce soluble erythrogenic (Dick) toxin while others do not.[6]

In order to demonstrate the relative ability of different strains to produce scarlet fever, the ratio of cases of pharyngitis-tonsillitis with and without rash should be determined in a community where access to a high proportion of all the infected persons is possible. Since most patients with streptococcic pharyngitis-tonsillitis without rash are not ordinarily hospitalized and therefore not identified as to serologic type, the opportunity to make such a study presents itself but rarely. It is our purpose in this report to present the results of typings of 672 strains of group A streptococci from patients in an army post where most of the infected persons were hospitalized. These studies show clearly that in a homogeneous community the proportion of infected patients who develop a scarlatiniform rash is quite different for different serologic types of hemolytic streptococci.

Dr. O. H. Robertson, director of the Commission on Air-Borne Infections, gave continued encouragement and helpful criticism.

From the Commission on Air-Borne Infections, Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the United States Army, Preventive Medicine Service, Office of the Surgeon General, U. S. Army.

Helpful cooperation was given by the medical officers at the camp, without whose good will and assistance these studies would have been impossible. The officers most closely associated with the work were Col. Dan S. Ogle, Col. Irwin B. March, Col. Arthur H. Corliss, Lieut. Col. Vincent Lentini, Major John S. Moffatt, Major H. D. Countryman, Major Forrest E. Martin, Capt. George B. Emory and Capt. E. Paul Tischer.

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SOURCE OF THE STREPTOCOCCI

The strains herein reported were recovered from the throats of patients with streptococcic pharyngitis, with or without scarlet fever, admitted to a station hospital. During the winter and spring of 1943 it was the practice in this hospital to separate, as far as possible, patients suffering from streptococcic sore throats from those with other upper respiratory diseases. In general, throat cultures were made on all patients who had tonsillitis, those whose throats were fiery red and any others who the ward or admitting officers believed might be infected with hemolytic streptococci. Consequently it was possible to secure cultures from a large sample of the streptococcic disease prevalent in the camp, though of course not all the cases in the camp are represented. Because of the dramatic nature of the rash, it is probable that over 90 per cent of the cases of scarlet fever are included.

The patients were all men between the ages of 18 and 40. All had had their basic training and were being given advanced courses in various specialties. Their length of residence on the post varied from three weeks to about three months.

One throat culture was taken on most patients, and one colony picked for grouping and typing. In many cases more than one throat culture was made, and in some six or seven separate colonies were typed. In no instance was more than one type recovered from any individual.

Dick tests were not done, but Schultz-Charlton tests performed by Capt. George B. Emory, contagious disease control officer, were positive in over 95 per cent of the cases of scarlet fever.

SEROLOGIC IDENTIFICATION OF THE STREPTOCOCCI

Some strains were grouped and typed immediately after isolation. Most, however, were stored in the ice box in small tubes of mule blood broth covered with a layer of liquid petrolatum and typed one to five months later. These stock cultures were transferred once during the period of storage.

When the cultures were removed from stock they were transferred first to blood broth and then subcultured in 40 cc. of tryptose phosphate broth. Hydrochloric acid extracts of the sedimented organisms were made and all group A strains typed by the capillary precipitin method of Swift, Wilson and Lancefield.[7] This method, which distinguishes hemolytic streptococci according to their M substance,[8] is particularly useful in typing large numbers of strains because granularity of the culture presents no problem, cross reactions are rare and as soon as the common types in a community have been identified the extracts of the organisms need be set up only against the serums of these types.[9] Thus it was our practice to set up unknown extracts against types 1, 3, 6, 17 and 19. If the extract proved to be one of these types, the type was recorded and the extract discarded. If no precipitate formed with these serums, the remaining extract was placed in the ice box and set up the following

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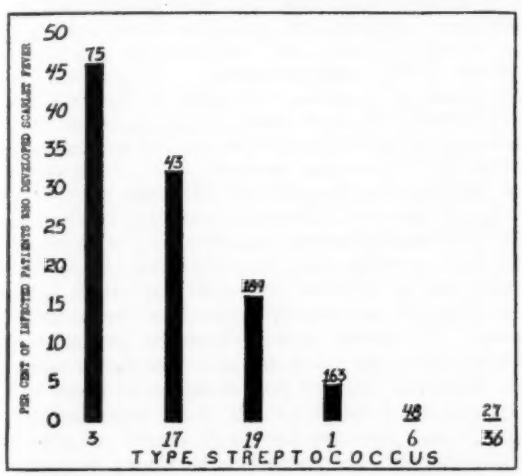
8. Lancefield, Rebecca C.: Antigenic Complex of Streptococcus Hemolyticus: I. Demonstration of a Type Specific Substance in Extracts of Streptococcus Hemolyticus, J. Exper. Med. **47**: 91, 1928.
9. The typing serum was generously supplied by Mrs. Rebecca C. Lancefield.

day against serums of types 5, 18, 29 and 36. If these were also negative, the extract was then tested against types 2, 4, 8, 9, 11, 12, 13, 14, 15, 22, 23, 24, 25, 26, 28, 30, 31, 32, 33, 34, 37, 38, 39, 40, 41, 42, 43, 44 and 46, all the serums that were available. Most strains which failed to type at this stage were then recorded as "negative." In some instances 1:2, and occasionally 1:4 dilutions of the extract were made and the typing repeated; this procedure occasionally resulted in a positive typing. Also a few type 19 strains which gave no precipitate with undiluted serum yielded positive reactions when the serum was diluted 1:2.

Though the main part of this report concerns the differences in the incidence of scarlet fever among patients infected by different types of hemolytic streptococci from November 1942 to August 1943, the results of typings made during the spring of 1942 are appended for a comparison of the general type incidence during the two seasons. Since no attempt was made to secure cultures from all the patients with scarlet fever during the spring of 1942, these data are of no value in determining the relative rash producing capacities of various strains. Many of these cultures were



Percentage of scarlet fever developing among patients infected with various types of hemolytic streptococcus. Numbers at tops of columns represent total number of patients infected with that type hemolytic streptococcus, both scarlet fever and pharyngitis-tonsillitis without rash.

typed by the slide agglutination method,[10] and those which showed cross reactions or which failed to type were later checked by the capillary precipitin method.

RESULTS

Occurrence of Scarlet Fever Among Patients Infected with Different Serologic Strains of Hemolytic Streptococci, November 1942 to August 1943.—Among the types represented by significant numbers of cases, the proportion developing scarlatiniform rashes varied from 46.6 per cent due to type 3 to none due to types 6 and 36 (table 1 and the chart). Intermediate between these two extremes were type 1 with 4.3 per cent, type 19 with 16.5 per cent and type 17 with 32.5 per cent. No scarlet fever appeared among the 17 patients infected with type 18, though the previous year this type caused several cases. The other types included in table 1 were not present in sufficiently large numbers to warrant the drawing of conclusions.

10. Agglutinating serum for the slide agglutination tests was supplied by the Commission on Hemolytic Streptococcus Infections; two sets of serum were used, one prepared by Dr. Francis F. Schwentker and the other by the Lederle Laboratories. Griffith.[1] Schwentker.[2]

Comparison of Type Incidence in Two Successive Years.—Though the population of the camp was continually changing, the type incidence of group A streptococci for the period November 1942 to August 1943 was very similar to that of the spring of 1942 (table 2). In both years types 19, 1, 6 and 17 were among the

TABLE 1.—*Proportion of Cases of Scarlet Fever Among Total Cases of Streptococcic Pharyngitis-Tonsillitis Produced by Serologically Separate Hemolytic Streptococci*

	November 1942 to August 1943		
Group A Type	Total Streptococcic Pharyngitis-Tonsillitis Patients With and Without Rash	Number of Patients With Scarlet Fever	Percentage of Scarlet Fever Patients in Each Type
19	189	31	16.5
1	163	7	4.3
3	75	34	46.6
6	48	0	0
17	43	14	32.5
36	27	0	0
18	17	0	0
5	16	0	0
12	9	0	0
29	6	4	66.7
30	4	0	0
28	3	0	0
15	2	0	0
14	2	0	0
39	1	0	0
24	1	0	0
Type undetermined	66	5	7.6
Total group A	672		
Total scarlet fever		95	
Per cent scarlet fever of all cases			14.1

five commonest types found, and in both years these types followed one another in frequency. The commonest type in the spring of 1942, type 18, fell to seventh place the following year, but two new types appeared in significant numbers. These were types 3 and 36.

TABLE 2.—*Type Incidence of Group A Hemolytic Streptococci Among Cases of Pharyngitis-Tonsillitis in Two Successive Seasons*

March to June 1942		November 1942 to August 1943	
Type	Percentage of Total Cases Infected by Each Type	Type	Percentage of Total Cases Infected by Each Type
18	29.4	19	28.2
19	24.4	1	24.4
1	11.7	3	11.2
6	10.0	6	7.1
17	6.7	17	6.9
26	3.3	36	4.0
12, 39	2.8 each	18	2.5
2, 9	2.5 each	5	2.4
10, 11, 15, 25, 28, 43, 45	Less than 1% each	12	1.3
		14, 15, 24, 28, 29, 30	Less than 1% each
Undetermined	3.3	Undetermined	9.8
Total number of patients, 180		Total number of patients, 672	

From November 1942 to August 1943 the data include over 95 per cent of the cases of scarlet fever plus about 80 per cent of cases of streptococcic pharyngitis-tonsillitis without rash.

During the spring of 1942 very few of the scarlet fever cases were cultured.

COMMENT

The establishment of the relative ability of various strains of hemolytic streptococci to produce scarlet fever is of considerable epidemiologic importance. Scarlet fever is a reportable disease in practically all communities, whereas other forms of streptococcic disease are not. If the ratio of cases of scarlet fever to the total cases of streptococcic pharyngitis-tonsillitis can be established for the various serologic types, a yardstick will be available for the estimation of the total amount

of streptococcic disease in a community during a given season. The information provided by such estimations would be of great value in the study of the epidemiology of rheumatic fever and other conditions associated with the hemolytic streptococcus.

Moreover, it would appear that serologically different strains may actually differ in their biologic behavior. If it is true that certain types are more likely to cause scarlet fever than others, it is also possible that specific strains may be found associated with such conditions as rheumatic fever and glomerulonephritis. The answer to these speculations will be forthcoming only when much larger groups have been studied.

If the population from which the strains herein reported was homogeneous in respect to susceptibility to scarlet fever, there can be little doubt that hemolytic streptococci types 3 and 17 are more likely to produce the disease than are types 1 and 19, and that types 6 and 36 would produce it but rarely. No Dick tests were performed to test the antitoxic immunity among the men in the camp. However, since nearly all were in the age group 18-35, and since they were drawn from all parts of the United States rather than from special areas, it is likely that the proportion of susceptible men infected by the various types was about the same. It is extremely unlikely that type 3 should have picked out persons with no antitoxic immunity, while types 1, 6 and 36 should have avoided these individuals. If this assumption is correct, it must be concluded that some strains of hemolytic streptococci have more highly developed rash-producing properties than others.

Though the data in this paper are probably significant in respect to the strains present in the camp, it will be interesting to see whether similar experiences with other homogeneous groups will corroborate these results. It is not inconceivable that differences in their capacity to produce scarlatiniform rashes exist among strains of the same serologic type.

The similarity in the type incidence in the camp during two successive years was surprising and suggests either that types 19, 1, 6 and 17 are very common in the entire army or perhaps in the United States as a whole or that these strains remained quiescent in the camp during the summer and the fall and became active again the following winter. Though the population of the camp was rapidly changing during the eighteen months of the study, these four types comprised 52.8 per cent of the total one year and 66.6 per cent the next. For some inapparent reason type 18, which was the commonest single type during the spring of 1942, was found in only 2.5 per cent of the cases the following fall, winter and spring. That only two important new types, types 3 and 36, should have invaded the post when thousands of new men from all parts of the country were continually passing through was not expected.

SUMMARY

1. A study of the incidence of serologic types among 672 strains of hemolytic streptococci was made in an army camp where the majority of patients with pharyngitis-tonsillitis were hospitalized, regardless of whether they had scarlatiniform rashes or not.

2. Of those types present in statistically significant numbers, type 3 produced scarlet fever in 46.6 per cent of the patients it infected and type 17 in 32.5 per cent. Type 19, on the other hand, produced scarlet fever in only 16.5 per cent of the cases, and type 1 in only 4.3 per cent. Types 6 and 36 produced no cases of scarlet fever.

3. Despite the constantly changing population of the camp, types 19, 1, 6 and 17 were among the five most common during two successive years. Type 18 was the commonest type during the spring of 1942 but fell to seventh place the following year. Types 3 and 36 appeared in the camp during the winter of 1943, though they had not been present the preceding year.

University of Chicago.

Clinical Notes, Suggestions and New Instruments

A CASE OF PROBABLE INTRACRANIAL ANEURYSM ASSOCIATED WITH THE SYNDROME OF HISTAMINIC CEPHALGIA

CAPTAIN NORMAN B. ROBERG
MEDICAL CORPS, ARMY OF THE UNITED STATES

Three interesting and important types of headache are those of histaminic cephalgia, of expanding intracranial aneurysm and of classic migraine, the last mentioned being associated occasionally with ophthalmoplegia. Histaminic cephalgia, clearly defined as a disease syndrome by Horton,[1] has these salient features: It is a brief, recurrent, violent, unilateral headache involving the temple, the eye and the neck. Usually nocturnal in onset, it is associated with congestion of the nostril and eye on the affected side, and there is profuse watering of the eye. Pressure over the swollen temporal arteries or over the common carotid artery will give transient relief. The syndrome may be precipitated by alcohol or by histamine, may be relieved in the individual attack by epinephrine, and may be permanently relieved by desensitization with histamine. The second type of headache, brought about by expanding intracranial aneurysm, may give rise to varied headaches. However, Dandy[2] has described 13 cases in which intense headache involved the side of the head and the homolateral eye and was associated with paresis or palsy of the oculomotor nerve. The responsible aneurysms arose from the internal carotid artery on the affected side, either in the carotid canal or intracranially before the anterior cerebral artery is given off. Walsh and King[3] have discussed the occurrence of severe, intermittent pain in or about the eye in association with aneurysms of the anterior end of the circle of Willis. After days or weeks of this intermittent pain, paralysis of the oculomotor nerve may occur. The third syndrome, that of ophthalmoplegic migraine, is well described by Oppenheim[4] and Wilson.[5] In persons having classic migraine, paralysis of the oculomotor nerve, and rarely also of the trochlear and abducens, may occur. The paralysis may last from a few days to several weeks, resulting in complete recovery, only to recur with the next attack of migraine. In many cases there is finally permanent paralysis of the oculomotor nerve. The onset of ophthalmoplegia may coincide with that of the headache, may occur late in the attack and presage cessation of the hemicrania, or the periodic ophthalmoplegia may occur without headache. Oppenheim[4] stated that "periodic oculomotor paralysis is related to hemicrania and, as presumably the latter, is to be ascribed to vasomotor processes." He believed that transient ischemia of the nerve, or pressure on it by engorged blood vessels, gave rise to the

1. Horton, B. T.: The Use of Histamine in the Treatment of Specific Types of Headaches, J. A. M. A. **116:** 377 (Feb. 1) 1941.
2. Dandy, W. E.: Surgical Treatment of Intracranial Aneurysms of the Internal Carotid Artery, Ann. Surg. **114:** 336 (Sept.) 1941.
3. Walsh, F. B., and King, A. B.: Ocular Signs of Intracranial Saccular Aneurysms, Arch. Ophth. **27:** 1 (Jan.) 1942.
4. Oppenheim, H.: Lehrbuch der Nervenkrankheiten, ed. 7, Berlin, S. Karger, 1923.
5. Wilson, S. A. K.: Neurology, London, Edward Arnold & Co., 1940.

paralysis, but that no local lesion of the nerve or blood vessels existed in these cases. Oppenheim observed however that, in contrast to the typical attack of migraine, the headache and vomiting might exist over a period of weeks when associated with oculomotor paralysis. This observation would suggest confusion with the syndrome of intracranial aneurysm. Wilson,[5] writing later than Oppenheim, did not consider the cause of the ophthalmoplegia to be identical with that of the reversible migraine, regardless of their association. He found at autopsy various neoplastic or inflammatory changes of or adjacent to the third nerve. Bassoe,[6] in his discussion of migraine, chooses to exclude cases with an associated ophthalmoplegia. He considers the probability of organic vascular disease to be great in such cases. The following case is of interest, as it contains the salient features of the three syndromes of histaminic cephalgia, of aneurysm of the internal carotid artery and of ophthalmoplegic migraine.

REPORT OF CASE

An intelligent, Swedish born, married woman of 57 had always been well except for severe rightsided headaches accompanied by nausea and vomiting. These headaches had occurred throughout the menacme, usually only at the time of her menses. No headaches of any type had been present since the menopause nine years prior to the present illness. At that time she sought advice concerning a throbbing, rightsided headache of daily occurrence for several weeks, which was variable in duration, time of onset and intensity and bore no similarity to the headaches which formerly had existed during the menacme.

Physical examination of this slender, alert, rather tired woman gave normal results. The retinas showed but slight arteriovenous compression, and the blood pressure was 130/80. Neurologic examination was normal, as were the Kahn reaction and the routine blood counts and urinalysis. At that time no opinion was formed as to the nature of her headache.

Several days later the patient was seen at home, having had for an hour an excruciating rightsided headache. Restless, moaning and in agony, she was reluctant to remove her hand from the right eye, of which the lids were swollen, the conjunctiva was deeply injected, and from which the tears flowed constantly. The right temporal vessels were prominent and tender. Pain and exquisite tenderness involved also the eye, the side of the nose at the level of the inner canthus, the entire temporal region and the nuchal muscles of the right side. The left side of head and the neck were uninvolved. The pain and spasm of the nuchal muscles were such that the patient could not rotate her head. Compression of the right carotid artery gave relief from the headache within a few seconds. Within a minute the eyelids were less swollen and the patient could open her eye. The tears ceased, the conjunctiva became less suffused, and relaxation of the nuchal muscles allowed painless rotation of the head. Upon release of the pressure over the carotid, the patient cried out with pain and the former condition returned immediately in all detail. She was given epinephrine 0.5 cc. of 1:1,000 solution subcutaneously. Within five minutes the cervical myalgia, the hemicrania, the tumescence of the temporal vessels and the lacrimation, photophobia and conjunctival suffusion of the right eye all became mild. After a second injection of 0.5 cc. of epinephrine, as the pulse rose and the skin became cool and damp, the patient fell into a sound sleep. The headache recurred within several hours, and she was hospitalized.

Physical, neurologic and routine blood and urine examinations again gave normal results. X-ray examination of the skull gave normal results. Lumbar puncture showed an initial pressure of 70 mm. of cerebrospinal fluid with normal dynamics. The cerebrospinal fluid showed minimal xanthochromia on comparison with water. The protein content was 65 mg. per hundred cubic centimeters, the colloidal gold curve read $0^{1}0$, the Wassermann reaction was negative, and 5 lymphocytes per cubic millimeter were present. The xanthochromia, though slight, was considered adequate evidence for relating the headache to intracranial organic disease.

During the first two days the syndrome occurred irregularly and severely, lasting from one half to two hours. The headache was precipitated by 0.05 to 0.1 mg. of histamine subcutaneously, and repeatedly was relieved in full or in part by 1 cc. of 1:1,000 epinephrine. Morphine sulfate subcutaneously in amounts of 0.015 mg. alone or combined with 2 Gm. each of sodium salicylate and sodium bromide by mouth gave unsatisfactory relief. Desensitization by histamine, as recommended by Horton,[1] was initiated. On the third hospital day the right upper lid was paretic; by evening there was complete loss of right oculomotor function, the pupil being dilated and not reacting to light, and only the external rectus and superior oblique muscles retaining their function. On this day there was no headache. Lumbar puncture yielded the same findings as on the day of admission.

From the third to the eleventh days the oculomotor paralysis was constant, the lacrimation of the right eye was only occasional and slight, and the retro-orbital pain was mild. Attacks of temporal pain and nuchal myalgia continued, coming regularly every morning at about 4 o'clock, the patient usually awakening from sound sleep with a cry. Morphine sulfate 0.015 mg. would now give gradual relief. The headache might recur three to four times daily at irregular intervals. Progressive histamine desensitization was continued during this period. For three days 180 units of histaminase ("Torantil") was given daily by mouth with no appreciable effect and was then discontinued. On the eleventh and twelfth days the headaches were mild, and the patient was up and about her room.

On the evening of the twelfth day she suddenly lost consciousness and went into shock with irregular respiration and a pulse rate of 45. Other than stiffness of the neck, no abnormal neurologic signs were present. Lumbar puncture revealed grossly bloody fluid under elevated pressure. Consciousness returned in two hours, there was moderately severe generalized headache, and the deep and superficial reflexes remained normal. From the twelfth to the twentieth day there was fever of from 101 to 102 F. and gradual subsidence of the stiffness of the neck and the generalized headache. Following the hemorrhage, the patient was seen in consultation by Dr. Peter Bassoe, who concurred in the diagnosis of a ruptured aneurysm of the right internal carotid at or near the circle of Willis and advised against an attempt to ligate below or about the aneurysm. From the time of the hemorrhage on the twelfth day until the thirty-second day there was no definite manifestation of the hemicranial syndrome, only the oculomotor paralysis continuing. From the thirty-third to the thirty-eighth day this paralysis began to improve. At the same time that this improvement was noted, the hemicrania recurred mildly in the early morning, and on occasion during the day, and on the thirty-ninth day struck again with full fury. Temporal hemicrania, lacrimation, suffusion of the conjunctiva and pain at the root of the nose and in the eye all returned; the right cervical myalgia did not recur. The attacks came almost only in the early morning, as had previously been the most regular time of occurrence. Histamine desensitization, stopped at the time of the hemorrhage, had not been resumed. Morphine and codeine were palliative. Sleeping with the bed at an angle of 30 to 45 degrees gave no relief. Benefit was satisfactory, but not complete, from the introduction high into the right nostril of applicators soaked with 1:1,000 epinephrine. A capsule of 5 grains (0.32 Gm.) of caffeine citrate often gave complete relief and was more rapidly obtainable than the equally efficacious strong coffee. By the sixty-fourth day the attacks of early morning headache were mild and were easily controlled by caffeine citrate by mouth. Only slight oculomotor paresis was present. The patient was discharged to her home and after another month had no more headaches. When the patient was last seen in July 1942, nine months after discharge from the hospital, she was enjoying excellent health, had had no headache of any type for eight months and only occasionally, when tired, had transient diplopia from a mild paresis of the right internal rectus muscle.

6. Bassoe, Peter: Migraine, J. A. M. A. **101:** 599 (Aug. 19) 1933.

COMMENT

The immediate cause of headache appears to be that of rapid fluctuations of arterial intramural tension.[7] Horton[1] states that the mechanism of the headache in histaminic cephalgia is not clear but suggests that it is from "a local release of histamine with resultant vasodilatation which is almost exclusively confined to the ramifications of the external carotid artery." Such a "local release of histamine" has been demonstrated in the phenomenon of dermographism. However, histamine has not been shown to be a chemical mediator in the sense of epinephrine and acetylcholine, both of which will cause local vasomotor changes when the corresponding autonomic nerves are stimulated. Our present knowledge hardly justifies any assumption further than the mediation of local arterial and arteriolar changes by the associated vasomotor nerves. Desensitization to histamine may well diminish a general or local tendency to vasodilatation, but that does not indicate that the local vasodilatation is caused by histamine. The objective manifestations of histaminic cephalgia, comprising local vasodilatation, increased skin temperature, hyperemia of the conjunctiva, lacrimation and often rhinorrhea, are principally evidences of cervical sympathetic paralysis, partially of parasympathetic stimulation. Paroxysmal vasodilatation because of local sympathetic disturbance either in the hypothalamus or peripherally in the periarterial plexes could well give rise to this localized syndrome. Local disease of the carotid artery, as in the case presented, might constitute such a disturbance of the surrounding plexus. The relaxed vascular tonus during sleep (and in the horizontal position) lowers the threshold to crises of local vasodilatation, just as alcohol and histamine can precipitate such a crisis. I took care of a middle aged man who began to have severe hemicrania after drinking his customary eight highballs, slowly had to reduce the highballs as the headaches were progressively more easily precipitated, and, when finally one highball would cause severe headache, died of recurrent subarachnoid hemorrhage. It is difficult to explain localized, dynamic, vascular changes otherwise than by a disturbance of innervation. It is reasonable to consider that there is a disturbance of vasomotor control which renders that subordinate portion of the arterial system peculiarly susceptible to vasodilator influences.

Horton has stated[8] that there was no evidence of organic disease precipitating the syndrome of histaminic cephalgia in the series of cases which he studied. The same may be said for most cases of epilepsy, classic migraine, Ménière's syndrome, bronchial asthma and peptic ulcer. Precipitating and aggravating factors in many of these diseases are recognized; the fundamental causes remain unknown. The origin of such disturbances may well be in the hypothalamus, that mysterious region in which the terms "organic" and "functional" become pale, confused and devoid of meaning.

The resemblance of this case to the syndrome of ophthalmoplegic migraine is superficial. The patient had had classic migraine during the menacme, and she recognized the later headache as being different. However, if it had not been for Horton's description of histaminic cephalgia, and for the lumbar puncture which showed minimal xanthochromia, a diagnosis of ophthalmoplegic migraine would have been entertained. In this case, relief from the headache came only partially with the ophthalmoplegia, completely with the hemorrhage, and recurred for a few weeks during final convalescence.

SUMMARY

A woman of 57, who had had classic migraine during the menacme, had no headache for nine years following the menopause and then suffered the acute onset of severe, paroxysmal headache. The latter headache, in all essential features, conformed to the description by Horton of the syndrome of histaminic cephalgia. The course of the illness in this case indicates that the disease giving rise to the syndrome was that of an aneurysm of the right internal carotid artery.

7. Schumacher, G. A., and Wolff, H. G.: Experimental Studies on Headache, Arch. Neurol. & Psychiat. **45**: 199 (Feb.) 1941.
8. Horton, B. T.: Personal communication to the author.

ACUTE GOITER DUE TO CYANATE THERAPY

REPORT OF TWO CASES WITH THYROIDECTOMY

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Since 1925, when the various cyanate preparations were reintroduced in the treatment of essential hypertension, various toxic manifestations have been noted in patients receiving these drugs, including a sudden and often painful enlargement of the thyroid gland. This acute goiter fluctuates in size and is often so painful that it has been considered actual thyroiditis. Symptoms suggesting myxedema may accompany the enlargement of the thyroid, such as edema of the eyelids. The basal metabolic rate is often normal or minus. Regression in the size of the gland to normal occurs with cessation of the cyanate therapy. The most recent published case is that of Foulger and Rose,[1] who report that a woman aged 35, who was given potassium thiocyanate for essential hypertension, showed symptoms of myxedema, the thyroid gland became noticeably enlarged and the basal metabolic rate was slightly below normal. Regression occurred following the administration of thyroid and cessation of the cyanate therapy. Fahlund[2] reported that a woman aged 61, who had had a thyroidectomy done eleven years previously, developed an extremely tender enlargement of the thyroid gland in addition to a diffuse maculopapular eruption over the face, extremities and trunk. The diagnosis was made of acute thyroiditis and dermatitis medicamentosa, all thought due to sensitivity to potassium thiocyanate. The cyanate therapy was discontinued and the painful thyroid rapidly regressed in size, so that it was no longer palpable five days later.

I have recently had the opportunity of examining 2 specimens of cyanate goiter, grossly and microscopically, which had been removed from 2 patients in two different hospitals. In both cases there had been a rather sudden and rapid enlargement of the thyroid gland. In 1 instance the enlargement was suspected of being due to a carcinoma, and in the other case the acute swelling was ascribed by the clinician in charge of the patient as being due to hemorrhage into an adenoma. In neither case, however, was there any record of a preexisting adenoma of the thyroid having been observed.

The only other reported microscopic study of a cyanate goiter is that of a case of Means[3] in which a biopsy was made of a patient who was receiving cyanate therapy and who developed a sudden enlargement of the thyroid gland. However, the microscopic report is inconclusive in this case. The following 2 cases are reported, therefore, with a brief discussion of the microscopic appearance, since it is my opinion that this is not a new pathologic entity but is one that has frequently been incorrectly diagnosed or the true nature of the microscopic picture misinterpreted.

REPORT OF CASES

CASE 1.—A white woman aged 67, a housewife, had been treated at a private physician's office since April 1942 for hypertension. Her blood pressure ranged between 260/140 and 190/90. Beginning on May 5, 1942 potassium thiocyanate was given the patient in doses averaging 20 grains (1.3 Gm.) daily. Her blood cyanate level varied from 12 to 20 mg. per hundred cubic centimeters. Enlargement of the thyroid gland was first noticed on Dec. 15, 1942, approximately seven months following the first administration of the potassium thiocyanate. There was some fluctuation in the size of the thyroid gland, but eventually the patient complained of difficulty in swallowing and developed edema of the eyelids and the face. It was at this time that her physician suspected carcinoma arising in the thyroid and sent her to the King County Hospital for a thyroidectomy. The patient was first seen in the King County Hospital on Feb. 5, 1943 with a chief complaint of difficulty in

From the Department of Pathology, Mason Clinic, and the Department of Pathology, King County Hospital.

1. Foulger, Margaret P. H., and Rose, Edward: Acute Goiter During Thiocyanate Therapy for Hypertension, J. A. M. A. **122**: 1072 (Aug. 14) 1943.
2. Fahlund, G. T. R.: Painful Enlargement of the Thyroid Gland: A Manifestation of Sensitivity to Thiocyanate, Proc. Staff Meet., Mayo Clin. **17**: 289 (May 13) 1942.
3. Means, J. H.: Diseases of the Thyroid Gland, New England J. Med. **227**: 594 (Oct. 15) 1942.

swallowing and swelling of the eyelids. Physical examination showed edema of the eyelids and a portion of the upper part of the face. The thyroid was diffusely enlarged. It was smooth and was slightly tender to palpation when the head was turned from side to side. There was no thrill or bruit. There was cardiac enlargement, due presumably to the patient's hypertension, the blood pressure on admission being 200/95. The basal metabolic rate soon after admission was —5. This was repeated in a few days and was +21. Thyroidectomy was decided on and the patient was given 10 minims (0.6 cc.) of strong solution of iodine (Lugol's solution) three times daily for approximately two weeks. Subtotal thyroidectomy was done on March 2.

Pathologic examination revealed that the specimen consisted of two lobes of thyroid gland connected by an isthmus, weighing 52 Gm. The surface was relatively smooth and somewhat lobular, but no discrete nodules were found. The surface made by cutting had a meaty appearance. The gland was firm, was pink, and resembled the appearance of a hyperplastic thyroid. Microscopic sections (fig. 1) showed a solid cellular pattern, the acini were uniformly small, the epithelium was cuboidal to columnar, and the colloid was either very scanty or entirely absent. However, what colloid was present stained brilliantly as though it were concentrated. Some acini were imperfectly formed, and there were areas where these cells appeared to be arranged in a cordlike pattern. There was some lymphocytic infiltration, although there was complete absence of lymphoid follicles.

CASE 2.—A white woman aged 25, a housewife, was first seen at the Mason Clinic on June 23, 1942 with a chief complaint of high blood pressure. This had been present for many years, having first been noticed when the patient was 12 years of age, when the blood pressure was 160, and again at the age of 19, when an examination showed the blood pressure to be 170. She had had no subjective symptoms from her hypertension until recently, when she had noticed persistent fatigue and some difficulty with her vision. The patient was obese, with a height of 66 inches (168 cm.) and weight of 210 pounds

Fig. 1 (case 1).—The small acini with tall epithelium are shown. Colloid is entirely absent in some acini; where it is present, the staining is brilliant. Masson trichrome; reduced from a photomicrograph with a magnification of 129 diameters.

(96 Kg.). Funduscopy showed hypertensive retinitis group 2 to 3. The remainder of the physical examination was essentially negative, except for the blood pressure, which was 220/140, and the pulse rate was 120. Complete laboratory studies were made, which were all negative except for a fixed specific gravity of the urine after the concentration test. A diagnosis was made of severe hypertension. The patient was put on a reduction diet and on June 27 was placed on potassium thiocyanate, the average dose being 7½ grains (0.5 Gm.) daily. For the next four months the patient was given cyanate therapy, and the blood cyanate level varied between 5 and 14.8 mg. per hundred cubic centimeters. On October 8 a therapeutic abortion was done on a gravid uterus of six weeks'

Fig. 2 (case 2).—The acini are irregular in shape and they are devoid of colloid. Many acini are imperfectly formed and the cordlike pattern is demonstrated. Masson trichrome; reduced from a photomicrograph with a magnification of 129 diameters.

duration. On November 3 enlargement of the thyroid gland was first noticed, approximately four months after the patient was started on cyanate therapy. This was a smooth enlargement, more pronounced on the right side, and was slightly painful. The patient was observed at intervals for the next few months, during which time fluctuation in the size of the thyroid gland was noticed. On July 17, 1943 the right lobe of the thyroid had become noticeably enlarged compared with previous examinations, and it was felt at that time that the patient had a hemorrhage into an adenoma of the thyroid. The basal metabolic rate done on two machines at this time was —30 and —31. The patient was given strong solution of iodine 10 minims (0.6 cc.) three times a day for one day, and a subtotal thyroidectomy was done on August 3.

Pathologic examination revealed that the specimen consisted of several pieces of thyroid gland weighing 42 Gm. The surface was slightly lobular; the surface made by cutting was firm and pink and was meaty in appearance. The consistency of the gland was uniform throughout. There was no evidence of an adenoma nor any evidence of hemorrhage. Microscopic sections (fig. 2) showed acini which were uniformly small and which contained little or no colloid. The epithelium was high, cuboidal or columnar. The nuclei were large, and the cytoplasm was vacuolated. Many of these acini were imperfectly formed, and these contained no colloid whatever. There was considerable interlacing of coarse fibrous connective tissue between these acini.

COMMENT

Viewing the subject objectively, as a pathologist, one is impressed with extreme parenchymatous hypertrophy and hyperplasia. The microscopic appearance, however, is not that of toxic diffuse goiter, although there is a vague similarity to the microscopic appearance which was seen in toxic diffuse goiter before iodine was used as a preoperative medication. One difference is that the acini in the cases under discussion do not have the papillary infolding of epithelium into the acini which is seen in the hyperplasia of toxic diffuse goiter. What colloid is present is not thin or poorly stained, but rather it stains brilliantly as though concentration had occurred. The vacuolation of the colloid immediately adjacent to the epithelium

so commonly seen in toxic diffuse goiter is absent. Another point of difference between the cyanate goiter and the toxic diffuse goiter is the absence of lymphoid follicles, which are often, although not always, seen in toxic diffuse goiter. The extreme irregularity of the acini in some areas and a tendency toward invasiveness suggest a neoplasm, although in neither case was an adenoma present, which in most cases is a prerequisite etiologic factor in carcinoma of the thyroid. The veins show no tumor cells.

When the pathologist, because of the bizarre microscopic appearance presented in these 2 cases, obtains the clinical history, including the basal metabolic rate, it is apparent that there is a definite discrepancy between the clinical aspects and the microscopic picture. Neither case presented any evidence of hyperthyroidism; both showed mild clinical evidence of hypothyroidism, including a normal or a minus basal metabolic rate. Because of uncertainty and confusion which existed in my mind, microscopic sections in case 2 were sent to pathologists of two universities and also to a pathologist associated with a clinic group. A brief summary of the clinical history also was sent, including the basal metabolic rate, but there was no mention made of cyanate therapy, which at the time seemed unimportant. Three divergent diagnoses were received: One university pathologist stated that this was a Hürthle cell tumor and classified it as a malignant neoplasm. The diagnosis of the other university professor was "a special type of hypothyroidism closely related to sporadic cretinism." The pathologist of the clinic group, who had (I have learned subsequently) recently seen a similar slide with a similar history, gave the correct diagnosis.

A MUTED MEGAPHONE FOR THE FITTING OF HEARING AIDS

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Conversational and whispered voice tests for the determination of hearing impairment, though widely used, are admittedly seriously inaccurate. When such tests are used in the fitting of hearing aids the inaccuracy becomes an even greater problem, since the patient is purchasing an expensive piece of electrical equipment on the basis of these findings. Changing the intensity of one's voice such as whispering is practically impossible to control accurately, and the natural reaction when walking away from a listener is unconsciously to raise one's voice. However, every person maintains a relatively constant loudness for direct conversational speech.

On the basis of this fact the muted megaphone, a detailed drawing of which is appended, is presented as a reasonably accurate method for determining a patient's hearing impairment and the overall gain in speech reception derived from the use of any given hearing aid.

By careful and accurate acoustic measurement it has been found that at a distance 6 feet from the speaker normal conversational voice is amplified 20 decibels by the use of a 2 foot megaphone. If the megaphone is damped or "muted" by the placement of specially designed felt disks, the voice is attenuated or reduced from 10 to 15 decibels for each disk. With four disks in place the voice is attenuated to a level at which only the normal hearing person can understand the spoken words.

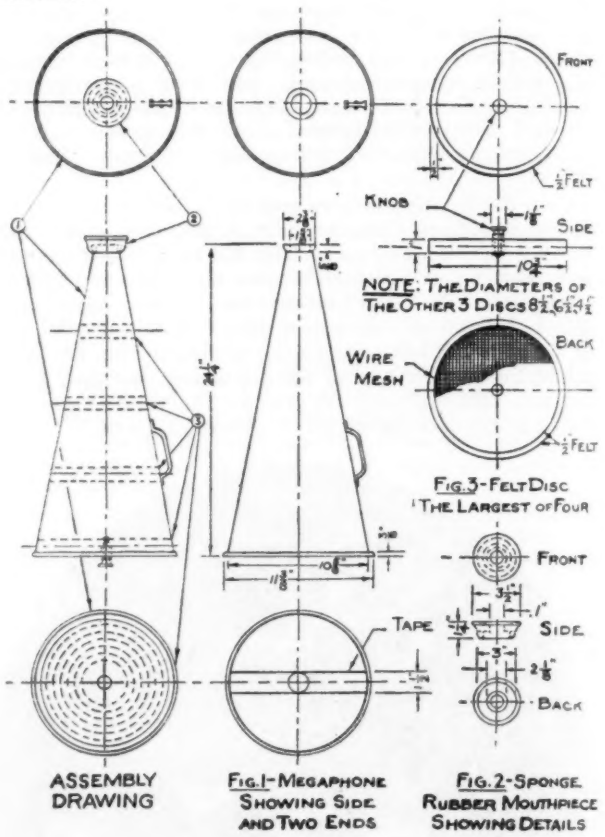
Conversational voice is from 40 to 50 decibels above the normal threshold. The unmuted megaphone increases it 20 decibels more or from 60 to 70 decibels above the normal threshold and an even greater increase may be obtained by shortening the distance between the megaphone and the patient which may be necessary in the case of the profoundly deafened individual. If each disk gives an attenuation of 10 to 15 decibels, the maximum attenuation of the four disks is approximately 50 decibels. Measurements have been made to determine whether there was frequency discrimination. This does not occur to any appreciable extent. In order to eliminate leakage of sound outside the megaphone a sponge rubber cushion is placed around the mouthpiece. The felt disks are constructed of one-half inch felt backed by wire mesh for support, with a knob in the center to facilitate placement and removal. Two strips of tape are placed lengthwise inside the megaphone to keep the felt disks in place.

From the Otological Research Laboratory.

METHOD OF TESTING

The patient is seated in a chair 6 feet from the unmuted megaphone and asked to repeat the test sentences spoken by the examiner through the megaphone. The conversational voice is either attenuated by the placement of the felt disks inside the megaphone or made louder by shortening the distance between the megaphone and the patient, until a point is determined at which at least 60 per cent of the sentences can be repeated correctly. This distance is recorded and maintained throughout the rest of the test.

A hearing aid is then placed on the patient's ear, the type of aid and the ear on which it is used having been determined by previous audiometric tests. One or two of the smaller felt disks are placed in the megaphone, sentences again delivered to the patient and adjustment of the volume control of the hearing aid made.



Details of muted megaphone.

According to the minimum requirements for acceptance by the Council on Physical Therapy of the American Medical Association, an electrical hearing aid shall improve at least 30 decibels for speech the hearing of the deafened ear for which it is prescribed or fitted. If the patient can understand speech with three disks in place the aid is supplying a completely adequate gain of more than 30 decibels. If speech is not intelligible with the three disks the aid is inadequate. Four disks in place would mean a gain of about 50 decibels and is the maximum any hearing aid can give without distortion. In most instances this amount of gain is not necessary.

(This method should be used, of course, only when accurately controlled electrical equipment is not available.)

CONCLUSION

The so-called "muted megaphone" provides a simple accurate and inexpensive method for measuring hearing loss for speech and the gain which any hearing aid may give to the hard of hearing patient.

Special Article

VOLUNTARY NONPROFIT PREPAYMENT FOR HEALTH CARE

JOHN R. MANNIX
DETROIT

American medicine, American dentistry, American nursing, American hospitals have given our people the world's finest health service. With respect to education, service and research, American health service has reached a degree of perfection never realized in any other country on earth. This has been attained for the most part through the private practice of medicine, dentistry and nursing and through the operation of the voluntary nonprofit hospitals. It has not necessitated the national governmental control or compulsion which has been resorted to in an attempt to elevate the health standards in many other countries.

All Americans naturally want the best service for the sick and injured which the application of scientific principles will secure. We also want the greatest possible use made of medical knowledge and skill through the universal distribution of health services to all our people. But we must admit, I believe, that the economic advances in American health care have not kept pace with the scientific advances. The problem confronting us is how best to bring economic progress abreast of scientific progress.

Considerable progress already has been made in this direction. For example, there appears to be general acceptance of two important basic points: first, that arrangements must be made whereby Americans can budget for health care and, second, that the best method of budgeting for health care is through the use of a prepayment plan. The question on which there is not agreement is whether we must have federal control of all health services under a system which would incorporate compulsory prepayment or whether we shall continue the private practice of medicine, dentistry and nursing and support these services through voluntary nonprofit prepayment plans under professional sponsorship.

SOCIALIZATION OF MEDICINE

There is a common impression that the medical and allied professions bitterly oppose the "socialization of medicine." I believe that a fair definition of the term "socialization of medicine" would be the adaptation of medical care to the welfare of the community. Neither the professions nor the hospital groups have opposed adaptation or change in medical care which appeared to be desirable for the welfare of the people. On the contrary, a study of official actions of the national medical, dental and hospital associations over a period of twenty-five years indicates clearly that the official bodies of these associations have favored such changes as were and are necessary to meet the needs of the people. At the individual level, every doctor who rises in the middle of the night to tend the sick, who lowers his bill to meet the financial capacity of a patient, who contributes his time and effort to the needs of the indigent is literally "socializing" his services.

On the group side the House of Delegates of the American Medical Association has repeatedly taken action showing that it has no opposition to voluntary group prepayment for medical and hospital care. Specifically, such actions were taken in 1920, 1934, 1935, 1937 and 1938. Similar actions were taken by the American Dental Association in 1938 and 1943. From 1933 to the present the attitude of the American Hospital Association has been to favor the greatest possible use of group prepayment. It is clear that voluntary group prepayment for medical and hospital care under professional sponsorship is a form of socialization of medicine favored by the professions and the hospitals.

On the other hand, the actions of the hospitals and the professions indicate that they strenuously oppose an approach to socialization which involves certain measures. These measures include (1) federal government control of medical practice, (2) denial of the individual's right to free choice of physician and hospital and (3) compulsory taxation or payment for health service.

NO NEED FOR FEDERAL CONTROL

To consider these proposed measures in sequence, the first of them—federal control and operation of health care—is neither necessary nor desirable. I say this for the following reasons:

1. In no other activity has there been, or is there likely to be, greater scientific progress than that of medical and hospital care under a system of private practice and voluntary operation. Progress in medical and other health care in the United States has been greater than in any country with governmental operation of health services—greater indeed than in any other country on earth.

2. A voluntary system is free of all possibility of political control or manipulation.

3. Federal regulation is not necessary. Through licensing, state regulatory bodies very satisfactorily control medical, dental and nursing practices at present. State bodies, being closer to the people and to local conditions, are in a much better position to avoid unintentional injustice or discrimination in the control of medical and allied practices.

4. Private operation is superior to governmental operation. I believe it will be conceded by most informed persons that the operation of voluntary hospitals has been superior to the operation of public hospitals. To quote the late eminent Dr. S. S. Goldwater, who had many years' experience in the private and public hospital fields and at one time was the director of the hospitals in the city of New York, the largest general hospital system in this country:

> My own experience in New York showed me how far short government hospitals can fall from the perfection which has been attributed to them. Perfect conditions do not exist anywhere, and even in New York, where, as head of the city's hospitals, I worked under conditions as favorable as can be expected in government, the story has not been told of the impediments placed by government circumlocution in the way of anybody attempting to administer a large group of hospitals from a central office. The system as a whole failed to accomplish what I had in mind for the city because of the onerous conditions under which government work of all sorts had to be done. It could hardly be otherwise if the federal government attempted to exercise any measure of control over the voluntary hospitals.

Commenting on Dr. Goldwater's remarks, Dr. Howard T. Karsner, director of pathology, Western Reserve University School of Medicine, stated:

> I also have had extensive experience with both private and publicly supported hospitals in Cleveland and other cities. A case in point is Cleveland City Hospital. . . . the budget

Read before the annual meeting of the Massachusetts Hospital Association in November 1943.

is but one item in the entire operation of a large city and is under the control of the city council. Expenditures are kept at a distressing minimum, improvements of equipment suffer and the research necessary to the advancement of medical science is distinctly handicapped. In certain respects the contrast with affairs at the University Hospitals is highly favorable to the latter.

This superiority of care in private hospitals has come to be appreciated by the American people, as is evidenced by the fact that the occupancy of government hospitals has dropped from 85 per cent to 75 per cent during the past five years, while the occupancy in private hospitals has increased from 70 per cent to 80 per cent.

The government has been responsible for the care of nervous and mental diseases in this country for a number of years. There is perhaps no branch of health care so neglected. The American people also have looked to the government for the care of the chronically ill, and again we find a very unsatisfactory situation.

5. There are sound reasons for holding that government should confine itself to those activities which cannot be performed readily by the people themselves. Some of these reasons were effectively stated by Hon. Leverett Saltonstall, governor of the State of Massachusetts, in the November 1943 issue of the *American Mercury*. "Throughout its entire history," Governor Saltonstall writes, "the fundamental principle of our democracy, as of every other democracy, has remained the same: the performance by government of only such services for the benefit of the individual citizen as he believes can best be performed by all citizens acting for the common good. . . . The average citizen wants to discard . . . government by edict, collectivism and experiments made simply for the sake of change. . . . He rightfully fears the weakening of individual enterprise, initiative and resourcefulness by an overgrown central government. . . . The great personal virtues bestowed by Washington, Jefferson and Lincoln must be revived. The country was built from the bottom up and not from the top down, and we must not reverse the direction."

6. Private philanthropy and individual charitable activities, giving outlet to some of the highest of human impulses, are cherished by the voluntary system but could have little or no place in a federal program.

7. The voluntary system preserves free choice of physician, dentist and hospital. Like "socialization," this matter of "free choice" usually is thoroughly misunderstood, perhaps because it is so easy to over-rationalize. It should go without saying that a physician responsible to his patient, rather than to an impersonal system, is much more likely to place the patient above the system. The patient should come first and under the voluntary system he does. From the other point of view the confidence which a patient has in his doctor, his dentist and his hospital often is a vital factor in his recovery or his willingness to submit to proper treatment.

I do not agree with the argument that the public has but little freedom in the choice of physicians at present. It is an equal fallacy, I believe, to maintain that the people are not interested in free choice because of their satisfaction with some of the great medical clinics, such as the Lahey Clinic in Boston, the Crile Clinic in Cleveland and the Mayo Clinic in Rochester, Minn. While it is true that the patient has little choice of individual physicians in these clinics, he still has a choice between clinics or the choice of clinic physicians and physicians in private practice. Further, these clinics are responsible directly to their patients and not to an outside and perhaps remote authority.

It seems useless to theorize that freedom of choice could be maintained under a federal health system. Such a notion is contrary to the historical proclivities of government and certainly is directly counter to the practice in governmental health services today.

NO NEED FOR COMPULSION

Compulsion is no more necessary than federal control and operation of health services. The only change necessary is in the method of payment, and this change is rapidly coming about by voluntary means. Over twelve million persons have enrolled for hospital service and over one million persons for medical service in the last few years alone, and there are ample indications that such programs have scarcely begun to realize their promise. As the American people already have learned to budget voluntarily for a host of other needs, they are now demonstrating that they welcome the opportunity to budget for health.

Our national experience with insurance, which is budgeting for possibilities or eventualities that are largely unpredictable for the individual purchaser, fully supports this observation. Americans are also the most insurance conscious people on earth. There are in force over sixty-five million life insurance contracts. Nearly all American families have life insurance for adult family members, thereby providing for expenses at the time of death. In one of America's largest cities last year only 192 persons—representing less than one half of 1 per cent of the deaths—were buried at government expense.

NO NEED FOR HASTE

Whenever it is demonstrated that there is no need for federal control of health service in America, and whenever it is demonstrated that there is no need to compel Americans to budget for health care, then we hear the cry that an acute situation exists—that there is a need for great haste—that there is a need for revolutionary tactics—that the evolutionary methods of voluntary plans cannot do the job in time. I submit that there does not exist a condition so acute that drastic action must be employed. I say this because:

1. We have the world's best health service, and it is folly to risk its destruction or deterioration through revolutionary action. The sole justification for haste is definite expectation of immediate overall improvement. Even if there were hope of ultimate superior improvement under a compulsory federal system—which I do not believe—it seems perfectly apparent that American medical practice would be in a state of turmoil for years.

2. The spectacular past progress of American health care will continue naturally under our voluntary system. There is no reason to believe that medical progress has stopped. There are excellent reasons for believing that it would be halted for a period of years by the upheaval resulting from compulsion, which by its very nature must be accomplished overnight.

3. Nonprofit, voluntary prepayment plans are expanding at a rate which would have been unbelievable five years ago. If more rapid progress is essential, government could do much to bring it about by encouraging and supporting these plans.

4. Haste is too often the strategy of the political reformer, the person who wants change for the sake of change, who is ready to sacrifice existing values for change and change alone.

ACCOMPLISHMENTS OF THE VOLUNTARY SYSTEM

Having considered what would be involved in federal control and compulsions, let us review the accomplishments of the voluntary system of health service in the United States. These accomplishments are enormous but have come about so naturally that our attitude toward them is dangerously matter of fact. We must realize that these accomplishments are a direct measure of the value of individual initiative and independent action by the people themselves. They include:

1. The education of 140,000 physicians, most of them in private medical schools. Forty-four of our medical schools, or 66 per cent of the total number, are connected with private universities.

2. The education of 70,000 dentists, most of them in private dental schools. Twenty-five of our dental schools, or 70 per cent of the total, are in private universities.

3. The education of 400,000 nurses, most of them in private nursing schools.

4. The providing of our armed forces with over 40,000 physicians, over 15,000 dentists and over 50,000 nurses.

5. A total of 4,021 hospitals, or 66 per cent of those in existence, under private supervision.

6. Over 316,000 hospital beds erected through voluntary giving at a cost of $1,600,000,000.

7. Care of 8,500,000 hospital patients in 1943. This is 68 per cent of all patients admitted to hospitals.

8. Birth care of over 1,400,000 infants, or 82 per cent of all children born in hospitals.

9. The extension of the span of life from 34 to 64 years between 1879 and 1943 under our health system, which is predominantly private.

10. The present cost of health service, which is in excess of $3,600,000,000 annually. Of this cost, 79 per cent is being met directly by the patients, 5 per cent is being met by philanthropy, 2 per cent is met by industry and only 14 per cent is met by the government.

11. The establishment of nonprofit hospital service plans in thirty-six states and the establishment of medical service plans in thirteen states. Such plans will be operated in all states at an early date.

It is evident that government has played a small part in the development of the health system in America. There is, however, a place for government. There is general agreement that government should continue to be an important influence in the fields of:

1. General public health.
2. Control of communicable diseases.
3. Care of tuberculosis.
4. Care of nervous and mental diseases.
5. Care of the chronically ill.
6. Care of war veterans. Here, however, veterans should be given free choice of hospital and should not be denied the use of private hospitals if they so desire.
7. Care of the indigent, but only to the extent that such persons cannot be cared for by private physicians, dentists and voluntary hospitals.

The government should supplement the efforts of private practitioners and voluntary hospitals in the foregoing fields. There is no reason why government should entirely supplant private and voluntary action; there are excellent reasons why it should cooperate with private effort.

THE PROGBESS OF PREPAYMENT PLANS

The real need is for the rapid extension of voluntary nonprofit prepayment plans for health service under the sponsorship of the medical and allied professions and the hospitals.

Of the many enthusiastic persons who attended the first conferences on group health care during 1933 and 1934, few visualized the subsequent growth and magnitude of this movement. Many friends of the movement still honestly believe and many opponents still contend that these plans have reached their full development and cannot be expected to reach a much larger proportion of the people. I am firmly convinced that, with the support of the medical and allied professions and with the support of hospital trustees and executives, it is possible to relieve all people in this country of the financial burden of health care in a reasonably few years through medical, dental and nursing plans and companion Blue Cross hospital plans. Considered from an objective point of view, the development of nonprofit prepayment plans has been little short of sensational.

Medical service plans under the sponsorship of medical associations had their origin in 1930, when various county medical societies throughout the states of Washington and Oregon offered medical service on a prepayment basis to people in those states. However, the medical service plan movement did not show much progress until the establishment of California Physicians' Service in 1939. This organization became the first statewide medical plan under the sponsorship and control of the medical profession. During the four years since its organization, seven state medical societies have organized similar plans. These are the societies of Massachusetts, New Jersey, Pennsylvania, Delaware, North Carolina, Michigan and Colorado. The Oregon Medical Association recently merged the original county medical plans of the state into a single statewide plan known as Oregon Physicians Service, so that there are nine statewide medical plans at the present time. In addition to statewide programs, plans under sponsorship of local medical associations are now operating in New York State, Missouri, Texas and Washington, and the medical professions in at least seven other states are giving serious consideration to the development of medical plans. The latter states include Maine, New Hampshire, West Virginia, Georgia, Ohio, Wisconsin and Utah.

Exact figures on medical service plan enrolment are not available at present, but as of Oct. 1, 1943 California Physicians' Service had enrolled approximately 88,000 subscribers; Michigan Medical Service had enrolled approximately 600,000 subscribers. Enrolment in Washington and Oregon exceeded 200,000 subscribers, and total enrolment in the thirteen states having medical plans was over 1,000,000 subscribers.

Throughout the entire nineteenth century and during the early part of the twentieth century there were many hospital service plans operated by individual hospitals, but it was not until 1932 that there was organized a plan offering free choice of hospital. This plan was started in Sacramento, Calif., in July 1932 and may be said to be the start of voluntary nonprofit hospital plans offering free choice of hospital. During 1933 and 1934 other free choice hospital plans were organized at Newark, N. J., St. Paul, Durham, N. C., New Orleans, Washington, D. C., and Cleveland. By 1935 twelve hospital service plans had enrolled 97,000 subscribers. By January 1940 sixty plans had

enrolled 4,500,000 subscribers. On Oct. 1, 1943 seventy-seven plans had enrolled over 12,000,000 subscribers in thirty-six states, the District of Columbia and three provinces of Canada. Having met the standards established by the American Hospital Association, these plans are privileged to use the association's Blue Cross insigne, denoting official approval. The thirty-six states and the District of Columbia where Blue Cross plans are operating contain approximately 87 per cent of the population of the United States, and the three provinces contain approximately 40 per cent of the population of the Dominion of Canada. Of the twelve states without Blue Cross plans, four already have special enabling acts, and efforts are being made by the Hospital Service Plan Commission of the American Hospital Association to establish plans in all twelve states at a very early date.

Considered superficially, these figures may not seem to have great significance. I submit that actually they have tremendous implications.

First, comparison of the rates of growth of these Blue Cross plans through the years demonstrates conclusively that their real growth has only started. They are adding more new subscribers today than at any other time in their history. Some critics have maintained that the first 12,000,000 subscribers were the easiest to enroll, that the plans will encounter increasing difficulties in future enrolment. This contention does not square with the facts concerning any new enterprise which meets eventual success. The beginning years—the years of trial and error, of amendment and adaptation—always are the most difficult. For Blue Cross plans the first 12,000,000 subscribers were not the easiest but the hardest to enroll.

Second, Blue Cross plans in a number of areas already have enrolled more than 50 per cent of the total population and are showing no signs of slackening in their growth. Nationally, Blue Cross plans may indeed have enrolled only 10 per cent of the population, but their potential certainly is much beyond that of the individual plans which have reached the highest percentage enrolments and actually, I believe, is sufficient to reach all who need such benefits.

Third, it would be pointless to pretend that Blue Cross plans have reached perfection any more than that a government program could instantly achieve anything remotely resembling a workable program. Blue Cross plans are still finding many new ways to bring better, more comprehensive, more readily available service to the people. Their growth will accelerate as these new technics are put into effect. Whoever does the job, it takes time and experimentation. I believe that the most important part of that experimentation already has been concluded by Blue Cross plans, but I should like to cite some of the leading points which have been advanced by many serious thinkers in the program for future development of all nonprofit prepayment health services.

THE FUTURE OF VOLUNTARY PREPAYMENT PLANS

If voluntary plans are to complete the task they have set for themselves, they must seek advancement toward the following goals:

1. Plans—hospital and medical—must be made available in every state in the Union.

2. Wherever the population would be better served by a merger of existing hospital plans, such mergers should be effected.

3. Uniform contract providing comprehensive services should be universally adopted as rapidly as possible by Blue Cross plans. It is likely that all plans will adopt this contract within the next twelve months. Similar uniform, comprehensive benefits should characterize the development of medical plans, and the new Council on Medical Service and Public Relations of the American Medical Association is in a position to make a real contribution in this connection.

4. There should be reciprocity of benefits among all service plans, so that subscribers to any plan would be entitled to the same services regardless of whether the services were rendered in their own or in another plan area.

5. Health care plans must become generally available to the rural population. Several statewide plans already have made an excellent start in this direction.

6. Health care plans must become generally available to the self employed and to employees of small companies or businesses. Persons in these categories comprise only a small percentage of the total population but certainly are equally entitled to protection.

7. Consideration should be given to methods by which protection can be extended to those persons who are unable to pay for prepaid health services.

8. Programs enabling prepayment for dental service and home nursing service should be established, and existing health plans should cooperate with the dental and nursing professions in their development. The American Dental Association approved an outline for experimental prepayment dental plans under sponsorship of the dental profession at its 1943 annual meeting.

9. The medical and allied professions and the nonprofit plans should undertake an adequate public education program to inform the nation of their contributions to the distribution of health services. Not only is this a brilliant success story which has never been adequately publicized, but it is a positive demonstration of what can be accomplished through private leadership without private gain, through public service without public compulsion.

VOLUNTARY EFFORT WILL SUCCEED

It seems clearly indicated that the great past success of nonprofit voluntary programs enabling prepayment for health services will be dwarfed only by their future progress. A decade ago fewer than 100,000 people enrolled in these plans during a period of three years. Today Blue Cross plans alone are enrolling more than 100,000 persons every fifteen days. The significance of this comparison cannot be ignored. It illustrates a trend which is gathering momentum in striking fashion. Within the near future it is confidently expected that Blue Cross plans, for example, will enroll new subscribers at a rate of 1,000,000 every two months. I believe it is entirely sound to estimate that half of the population of the United States will be enrolled by 1950, and that virtually all of the self-supporting population will be enrolled by 1960. Beyond this, there will be comparable advances in the other branches of health care.

In conclusion, I wish to predict that the magnificent progress which has characterized the scientific, educational and service advancement of American medicine, American dentistry and American nursing and hospital care will be matched in a few short years by equal voluntary achievement on the economic front.

Washington Boulevard Building.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary.

ANTIPNEUMOCOCCIC SERUM-TYPE SPECIFIC

(See New and Nonofficial Remedies, 1943, p. 531).

The following additional dosage forms have been accepted:

LEDERLE LABORATORIES, INC., PEARL RIVER, N. Y.

Antipneumococcic Serum (Rabbit), Type 6: Vials, 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 6 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

Antipneumococcic Serum (Rabbit), Type 9: Vials, 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 9 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

Antipneumococcic Serum (Rabbit), Type 10: Vials, 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 10 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

Antipneumococcic Serum (Rabbit), Type 11: Vials, 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 11 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

Antipneumococcic Serum (Rabbit), Type 12: Vial, 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 12 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

Antipneumococcic Serum (Rabbit), Type 13: Vial, 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 13 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

Antipneumococcic Serum (Rabbit), Type 15: Vial, 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 15 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

Antipneumococcic Serum (Rabbit), Type 16: Vial, 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 16 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

Antipneumococcic Serum (Rabbit), Type 17: Vial, 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 17 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

Antipneumococcic Serum (Rabbit), Type 18: Vial, 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 18 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

Antipneumococcic Serum (Rabbit), Type 19: Vial, 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 19 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

Antipneumococcic Serum (Rabbit), Type 20: Vial, 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 20 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

Antipneumococcic Serum (Rabbit), Type 21: Vial, 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 21 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

Antipneumococcic Serum (Rabbit), Type 22: Vial, 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 22 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

Antipneumococcic Serum (Rabbit), Type 23: Vial, 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 23 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

Antipneumococcic Serum (Rabbit), Type 24: Vial, 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 24 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

Antipneumococcic Serum (Rabbit), Type 25: Vial, 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 25 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

Antipneumococcic Serum (Rabbit), Type 27: Vial, 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 27 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

Antipneumococcic Serum (Rabbit), Type 28: Vial, 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 28 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

Antipneumococcic Serum (Rabbit), Type 29: Vial, 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 29 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

Antipneumococcic Serum (Rabbit), Type 31: Vial, 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 31 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

Antipneumococcic Serum (Rabbit), Type 32: Vial, 50,000 units. A refined and concentrated globulin solution of pneumococcus antibodies prepared by immunizing rabbits against virulent cultures of the type 32 pneumococcus. It contains 0.4 per cent phenol and 1-50,000 phenyl mercuric acetate as a preservative.

SULFAPYRIDINE SODIUM

(See New and Nonofficial Remedies, 1943, p. 189).

The following product has been accepted:

LEDERLE LABORATORIES, INC., PEARL RIVER, N. Y.

Solution Sodium Sulfapyridine (Sterile) 25% W/V: 10 cc.

NICOTINIC ACID

(See New and Nonofficial Remedies, 1943, p. 596).

The following dosage form has been accepted:

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SATURDAY, FEBRUARY 26, 1944

ARMY SPECIALIZED TRAINING PROGRAM MAKES NEW ARRANGEMENTS

Since the United States entered the war, the maintenance of medical education by provision of a continuous flow of premedical and medical students has given great concern to medical educators and to officials of the Selective Service System and of the Army and Navy medical departments. Just when the Army Specialized Training Program seemed to be functioning with reasonable satisfaction, a new announcement relative to its discontinuance has come forth; now every one involved is again on the "anxious seat." As we go to press, apparently the fate of the Army Specialized Training Program is being decided. If a decision has not already been reached, those concerned should realize that thus far the Army Specialized Training Program is the only technic that has been found for insuring automatically an adequate supply of physicians for the Army, the Navy and the civilian population regardless of the duration of the war.

Vice Admiral Randall Jacobs, Chief of Naval Personnel, states in a message to The Journal that the Bureau of Naval Personnel has recently received many inquiries concerning reports that the Navy college program may be discontinued. "All inquirers have been advised that the Navy Department has no plans to discontinue this program. The U. S. Navy is still expanding. The urgent need for technically trained young officers continues, and the colleges and universities participating in the V-12 program are doing a splendid job of producing such officers. While changing wartime conditions may, from time to time, necessitate revision in the quotas for the program in order to conform with the needs of the service, the Navy does not contemplate discontinuance of the program."

Whether the war ends soon or is greatly prolonged, both premedical and medical students must be kept in school in numbers sufficient to provide for the medical needs of the next few years. The transfer of the medical students now in the Army Specialized Training Program to the Enlisted Reserve Corps, on inactive duty, assigned to premedical or medical schools, may not meet the needs of the situation. Previously there was great unrest in the student body because these young men were constantly confronted with a feeling of inferiority in relation to those in uniform. Many premedical students dropped their work to enlist. Medical and premedical students naturally wish to be "in the war." Before the inauguration of the Army Specialized Training Program it was becoming increasingly difficult to persuade such students that their duty in this war was the pursuit of their premedical and medical studies to prepare them properly for military and civilian practice.

Fortunately the officials of the Selective Service System have been aware of the potential threat to professional education. On Feb. 15, 1944 Activity and Occupation Bulletin No. 33-6 was issued; this states definitely the status of students at this time before the Selective Service Boards. Briefly, a registrant who is in training and preparation as a medical student in a recognized medical school is to be considered for occupational deferment during the period of such professional course, provided he is a full-time student in good standing, he continues to maintain good standing and the institution will certify that he is competent and gives promise of the successful completion of his course of study. A student in premedical training is to be considered for occupational deferment if he is a full-time student in good standing in a recognized college or university and if it is certified by the institution that he is pursuing a course of study in this preprofessional field and if he continues his progress he will complete such a preprofessional course of study within twenty-four months from the date of certification. A registrant serving in a hospital or institution giving a recognized internship is to be considered for occupational deferment as long as he continues such an internship but for a total period not to exceed nine months. A national quota has been established for premedical students which states that the number must not exceed 50 per cent of the total average number of students in schools of medicine in the years 1938-1939 and 1939-1940.

While the decision as to the Army Specialized Training Program hangs in the balance, every premedical and medical student is urged to continue steadfastly in his work and to realize that completion of his training in medicine is the best contribution that he can now render for the war effort.

THE FREQUENCY OF ERYTHROBLASTOSIS

Fetal erythroblastosis is regarded as due to the immunization of an Rh negative mother by the Rh factor of the fetus who inherited the factor from his Rh positive father.[1] Therefore the discrepancy between the relatively large number of marriages of Rh positive men to Rh negative women, estimated at about 13 per cent of all marriages, and the low incidence of erythroblastosis, namely about 0.1 to 0.2 per cent of births, demands some explanation. Apparently the presence of the factor in the husband and its absence in the wife are not always sufficient to cause the disease in the child. Several explanatory considerations have been discussed:[2] 1. Variations in the permeability of the placenta may hinder or facilitate the passage of the Rh positive factor from the fetus to the mother and of specific antibodies from the mother to the fetus. 2. More than one pregnancy may be required to induce an adequate degree of immunization of the mother, just as several series of immunizing injections may be necessary to build up immunity in animals. The rarity of erythroblastosis in the first born points in that direction. The modern tendency to restrict the number of children may thus be one of the reasons for the disproportionately low incidence of erythroblastosis. 3. Recent reports indicate that the disease may occur in mild form and that some cases may escape recognition. 4. Men who have inherited the Rh factor from one parent only, that is heterozygous fathers, do not transmit the Rh factor to all children, and the children who do not inherit the factor escape erythroblastosis. This possibility is illustrated by the recent report of erythroblastosis in the Rh positive twin, the other twin, Rh negative, remaining unaffected.[3]

To these attempts at explaining the apparent relative rarity of erythroblastosis, Race and Taylor[4] bring forward one more. They claim that the majority of fathers of erythroblastotic infants are homozygous, that is, inherit the Rh factor from both parents, which would reduce considerably the possible incidence of the disease, since only about 43 per cent of all Rh positive persons are homozygous. The calculated frequency of marriages of homozygous Rh positive men with Rh negative women is about 5.69 per cent, as compared with about 13 per cent if all Rh positive men were included. In the serum of an Rh positive mother of an erythroblastotic infant Race and Taylor found an agglutinin for blood corpuscles of Rh negative persons and of heterozygous Rh positive persons. They assume that this agglutinin reacts with the recessive hereditary factor (gene rh). The serum in question did not react with 20 per cent of bloods. Now, an Rh negative woman married to a homozygous Rh positive man whose red cells are not clumped by such serum is less likely to give birth to a second or later child without erythroblastosis than if she is married to a heterozygous Rh positive man.

The study of the Rh factor in fetal erythroblastosis appears to be leading toward the possibility of determining in advance whether the union of a given couple is likely or not to result in erythroblastosis of the offspring.

1. Fetal Erythroblastosis and the Rh Factor, editorial, J. A. M. A. **124**: 441 (Feb. 12) 1944.
2. Potter, Edith L.; Davidsohn, Israel, and Crunden, A. B.: The Importance of the Rh Blood Factor in Erythroblastosis, Am. J. Obst. & Gynec. **45**: 254 (Feb.) 1943.
3. Kariher, D. H., and Spindler, H. A.: Erythroblastosis Fetalis and the Blood Factor Rh, Am. J. M. Sc. **205**: 369 (March) 1943.
4. Race, R. R., and Taylor, G. L.: A Serum That Discloses the Genotype of Some Rh Positive People, Nature **152**: 300 (Sept. 11) 1943.

THE SOURCE OF URINARY AMMONIA

The excretion of ammonia as ammonium salts in the urine is important in preserving the acid-base balance of the body. By excreting acid radicals in combination with ammonia, instead of with cations such as sodium and potassium, the kidney helps to conserve the fixed base of the body. The amount of ammonia excreted depends largely on the need of the body to husband its supply of fixed base. Thus there is an increased urinary excretion of ammonia on ingestion of acid or of "acid forming" foods and a decreased excretion on ingestion of alkali or of "base forming" foods.

The source of urinary ammonia has been investigated frequently. The ingestion of acid not only increases the urinary excretion of ammonia but at the same time decreases the excretion of urea. In 1921 Nash and Benedict[1] concluded that urea was the most probable precursor of ammonia in the kidney. This view persisted for years despite the absence of the enzyme urease from the kidney. About a decade ago, with the demonstration of the ability of the kidney to deaminate amino acids, the suggestion was made that amino acids were the most important sources of urinary ammonia.[2]

The origin of urinary ammonia appears at last to have been determined by Van Slyke and his associates.[3] These investigators experimented on dogs with explanted kidneys and determined accurately the amounts of various substances removed from the blood by the kidney in given intervals of time. All of the urea removed from the blood was excreted in the urine. Under no condition was it possible to demonstrate a conversion of urea nitrogen to ammonia nitrogen. Alpha-amino acid nitrogen was sometimes removed from the blood by the kidneys, but the amount was inadequate to account for the ammonia excreted. The amide of glutamic acid, glutamine, which only recently was demonstrated to be present in blood,

1. Nash, T. P., and Benedict, S. R.: The Ammonia Content of the Blood and Its Bearing on the Mechanism of Acid Neutralization in the Animal Organism, J. Biol. Chem. **48**: 463 (Oct.) 1921.
2. Krebs, H. A.: Untersuchungen über den Stoffwechsel der Aminosäuren im Tierkörper, Ztschr. f. physiol. Chem. **217**: 191, 1933.
3. Van Slyke, D. D.; Phillips, R. A.; Hamilton, P. B.; Archibald, R. M.; Futcher, P. H., and Hiller, Alma: Glutamine as Source Material of Urinary Ammonia, J. Biol. Chem. **150**: 481 (Oct.) 1943.

serves apparently as the precursor for the bulk of urinary ammonia. The administration of glutamine to a dog in which acidosis had been produced by the administration of hydrochloric acid definitely increased the excretion of ammonia. The excretion of ammonia could furthermore be depressed by changing from the hydrochloric acid acidosis to bicarbonate alkalosis, and with this change there was an accompanying decrease in the amount of glutamine removed from renal blood.

From the foregoing it appears that glutamine performs an important physiologic role as the precursor of the major portion of urinary ammonia in a mammal. Amino acids may possibly be a minor source, but urea is definitely not the precursor of ammonia in urine. Elimination of ammonia by the kidneys does, of course, decrease the amount of nitrogen available for synthesis of urea by the liver. This relationship led in the past to the erroneous conception that urea was the precursor of urinary ammonia.

PURIFICATION OF THE POLIOMYELITIC VIRUSES

Recently the study of poliomyelitis was taken up by the Institute of Physical Chemistry at the University of Uppsala, Sweden. This study at present centers on the poliomyelitic virus, its properties and reactions, in the hope that a basis may be built for attempts at chemotherapy and chemoprophylaxis of the disease. The first steps in that direction, namely the purification of the viruses of mouse encephalomyelitis (Theiler's disease) and of human poliomyelitis, are described in detail by Gard.[1] He has taken advantage of the close similarities of the two viruses, especially with respect to particle size and to the host reactions to infection, and is using the mouse virus as a model virus which can be studied in its natural host.

From a careful analysis of the present knowledge of these two viruses and of the virus of infectious swine paralysis (encephalomyelitis enzootica suum, also called the Teschen disease, from the place in Bohemia in which it was first recognized as an entity) Gard concludes that there are "no essential distinguishing characteristics" between them except their species specificity. Consequently to the groups of rickettsias, pox and influenza viruses must now be added the group of poliomyelitis viruses—human, murine and porcine. The establishment of types of poliomyelitis virus increases the opportunity for investigation of its basic properties. Only brief mention can be made of Gard's main result so far.

"Through a combination of salting out and differential centrifugation, preparations were obtained from infected mouse brains, the activities of which on a weight by weight basis were up to 200,000 times that of the starting material." Small amounts of a similar substance were obtained from the spinal cord of human poliomyelitis. Gard looks on these substances as representing pure murine and human virus proteins which are closely related. He also isolated protein materials from human stools and from the intestinal contents of mice and other animals, but the evidence as to the nature of such material is not complete. He suggests that it concerns a virus, "ordinarily nonneurotropic, but under certain circumstances developing neurotropic properties." The intensified interest in poliomyelitis is thus yielding notable advances not only in the United States but elsewhere in the world.

1. Gard, S.: Purification of Poliomyelitis Viruses: Experiments on Murine and Human Strains, supplementum 143, Acta med. Scandinav., 1943.

MICROBIOLOGIC ANALYSIS OF VITAMINS

Almost a century ago micro-organisms were recognized as sources of danger to man in the fields of medicine, of technology and of food preparation. However, conviction has also prevailed that certain bacteria, molds and yeasts are also of great service to mankind. The fermentation industries, including distilling, brewing and baking, the production of organic food acids on a commercial scale, the cheese industry, the white lead industry and recently the production of penicillin are among the many commercial activities based on one or more phases of the peculiar metabolism of micro-organisms.

Recently yeasts, molds and bacteria have been found extremely specific in their nutritive requirements; in many instances these micro-organisms need the food factors which have been shown to be important in promoting the nutritive success of mammals. By suitable adjustment of the basal medium the amounts of vitamins present in a sample may be determined by measuring the growth of the micro-organism or the formation of some product of its metabolism under narrowly controlled experimental conditions. As a result the time consuming bioassay for vitamins with laboratory animals and the laborious chemical methods have been supplemented, and to some degree replaced, by the more rapid microbiologic assays, particularly in connection with estimations of the vitamins in the B complex. Thus, various strains of yeast [1] have been employed for the quantitative determination of thiamine (B_1), pyridoxine (B_6), biotin and inositol; either the production of carbon dioxide or the turbidity caused by the growing yeast cells serves as a criterion of response. Lactobacillus casei ϵ [2] requires riboflavin, biotin and pantothenic acid for growth, and the titration of the lactic acid produced by this organism during a

1. Shultz, A. S.; Atkin, L., and Frey, C. N.: J. Indust. & Engin. Chem., Anal. Ed. **14**: 35, 1942; **15**: 141 (Feb.) 1943. Kögl, F., and Tönnis, B.: Ztschr. f. physiol. Chem. **242**: 43, 1936. Snell, E. E.; Eakin, R. E., and Williams, R. J.: J. Am. Chem. Soc. **62**: 175, 1940. Williams, R. J.; Stout, A. K.; Mitchell, H. K., and McMahan, J. R.: Pub. 4137, Univ. Texas, 1941, p. 27.

2. Snell, E. E., and Strong, F. M.: J. Indust. & Engin. Chem., Anal. Ed. **11**: 346, 1939. Shull, G. M.; Hutchings, B. L., and Peterson, W. H.: J. Biol. Chem. **142**: 913 (Feb.) 1942. Pennington, Derrol; Snell, E. E., and Williams, R. J., ibid. **135**: 213 (Aug.) 1940.

period of incubation serves admirably as a quantitative measure of these vitamins in the medium. At present the estimation of the concentration of niacin [3] in a sample is made by employing Lactobacillus arabinosus. A mold, Neutrospora sitophila,[4] is used to measure the amount of pyridoxine (B_6) in food materials and tissues; in this case the final estimation is made by weighing the dried mycelium.

The foregoing are representative examples of microbiologic vitamin analysis. The accepted methods of this class give results agreeing satisfactorily with chemical and animal assays. Economy of time and space represent the great advantages inherent in microbiologic assays. Further studies of the metabolic needs of microorganisms will indicate further use for yeasts, molds and bacteria in biochemical analysis, with consequent immediate benefit in food analysis and ultimate advantage in medicine.

3. Snell, E. E., and Wright, L. D.: J. Biol. Chem. **139**: 675 (June) 1941.
4. Stokes, J. L.; Larsen, Alma; Woodward, C. R., Jr., and Foster, J. W.: J. Biol. Chem. **150**: 17 (Sept.) 1943.

Current Comment

SYMPATHECTOMY FOR HYPERTENSION

None of the proposed treatments for so-called essential hypertension have yet withstood critical scientific evaluation. Among the modern methods of treatment which have received particular attention is sympathectomy. Ayman and Goldshine [1] recently reported a late follow-up study of 14 patients who had undergone a variety of sympathectomy denervations and who had been subjected to unusually detailed controlled study. One patient died a few days after operation, but in 5 of the remaining 13 there was definite prolonged nontoxic lowering of the blood pressure: 4 who had been almost wholly incapacitated before operation returned to full activity afterward. The studies of the Boston investigators do not clarify the reasons for the failures encountered, but it was apparent that so-called grade 4 patients did not respond. Success in general was more constant in those patients subjected to extensive denervation. Finally some were apparent failures only when placed against the background of standard clinic readings of the blood pressure, whereas the home blood pressure method revealed real improvement. The care with which this study of a small group was carried out, the duration of the period of observation and the qualifications of the investigators support their conclusion that therapy by sympathectomy should be considered in patients with essential hypertension in whom progressive elevation of blood pressure is found after long and careful study or in whom any evidence of beginning vascular damage is demonstrated. In the light of these favorable results it would seem desirable for other investigators to report promptly the results of comparable studies in similar groups.

1. Ayman, David, and Goldshine, Archie D.: Blood Pressure Determinations in Patients with Essential Hypertension: III. Evaluation of Sympathectomy Over a Three Year to Five Year Period, New England J. Med. **229**: 799 (Nov. 25) 1943.

RED CROSS FUND CAMPAIGN

Elsewhere in this issue (page 581) appears a summary of some of the wartime activities of the Red Cross. The services performed by this organization are now unprecedented in scope and importance. Physicians, who are probably more competent to judge the value of Red Cross work than are any other group, will doubtless support this campaign for funds by word and deed.

NO SENSITIVITY TO RATION TOKENS

On February 27 the Office of Price Administration issues its new ration tokens, made of vulcanized fiber. Some publicity just released, cleared and issued through facilities of the Office of War Information informs us that these tokens are "harmless to the handler." The U. S. Public Health Service has been making patch tests, including investigations of the raw materials of which the tokens are made and of the finished tokens, for more than five months; "the tokens failed to irritate or sensitize the skin of any of those on whom they were tried." Perhaps people are less sensitive to war measures than they were at the beginning. Furthermore, the manufacturers of the token materials have advised the OPA that "there has been no case in which an employee suffered an unfavorable reaction." Any member of a ration board can, however, describe reactions that were, to say the least, unfavorable. It seems that the new ration tokens are made of vulcanized fiber, which is the material used for sales tax tokens in many states, for tabbing hotel keys and for dog licenses. These preliminary uses have no doubt accustomed many people to the feel of vulcanized fiber. Just how sensitive the public is going to be to the new ration tokens from a psychologic point of view, time will tell.

THYMECTOMY FOR MYASTHENIA GRAVIS

Nellen [1] reports an instance of apparent cure following thymectomy in a case of typical myasthenia gravis in a nurse aged 23. In view of the spontaneous remissions in myasthenia gravis, time alone can tell whether the cure will be permanent; but, on the basis of the recorded results of thymectomy since its introduction by Blalock and his associates in 1939, Nellen concludes that the evidence at hand warrants removal of the thymus in every case of the disease. One may assume that myasthenia gravis may be caused by some substance or mechanism in the production of which the thymus takes an essential part. This assumption is supported by the frequency of cellular hyperplasia in the thymus in neurasthenia. Resumption of experimental investigations interrupted by the war no doubt will throw new light on problems connected with the thymus. In any case the results of thymectomy in myasthenia gravis should continue to receive close study.

1. Nellen, Maurice: Thymectomy for Myasthenia Gravis, Brit. M. J. **2**: 778 (Dec. 18) 1943.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

ARMY

BRIG. GEN. PERCY J. CARROLL AWARDED DISTINGUISHED SERVICE MEDAL

Brig. Gen. Percy J. Carroll, formerly of Washington, D. C., has been awarded the Distinguished Service Medal for "exceptionally meritorious service to the Government in positions of great responsibility from 8 December 1941 to 10 December 1943. When the decision not to defend Manila was reached, General Carroll arranged the evacuation from Manila to Australia in an improvised hospital ship of a large number of patients, ably anticipating and overcoming many serious obstacles. After his arrival in Australia he rendered distinguished service, serving as Chief Surgeon of the United States Army Services of Supply, Southwest Pacific area, and of the United States Army Forces in the Far East. Initially he planned and supervised the organization of the medical service for the command and the assembly of medical units and installations. He was most successful in making interim arrangements for the sharing by United States personnel of Australian medical facilities and in overcoming shortages of personnel and equipment by resourceful improvisation. During the early New Guinea campaigns he caused the organization of portable surgical hospitals, the high mobility of which made them invaluable. He worked constantly on means to combat malaria and to deal with other special problems of this theater. General Carroll's extensive military experience, energy and foresight enabled him to meet a multiple of problems under most unusual and adverse conditions, both in combat and in service areas, and to accomplish his mission with conspicuous success." Dr. Carroll graduated from St. Louis University School of Medicine in 1914 and has been in active service since June 25, 1916.

INDIANA UNIVERSITY HOSPITAL UNIT COMMENDED

Army General Hospital 32, made up of doctors and dentists of Indiana recruited under the sponsorship of the Indiana University Medical Center, Bloomington, and now stationed in England, received the commendation of Major Gen. John C. H. Lee, commanding the service of supply of the United States Army in the European theater, and of Brig. Gen. Paul R. Hawley, chief surgeon of the same command. Copies of the letters of commendation written by Generals Lee and Hawley were sent to Dean W. D. Gatch of the Indiana University Medical Center through Col. Cyrus J. Clark, former Indianapolis physician and medical school faculty member, who commands the hospital. General Lee stated that "never expecting less than the highest standards from the Medical Corps, it is none the less gratifying to find things so well in hand." General Hawley made this additional comment: "The Chief Surgeon is very proud of Indiana University's 32 General Hospital. The medical service of the European Theater of Operations has a very high standard. That you have met that standard so soon after your arrival in this theater is evidence of the fine personnel and the fine leadership of your organization. You are proper Hoosiers; and your Chief Surgeon is one Hoosier who is proud to be a fellow citizen of yours."

The unit was commissioned in June 1942, assigned for training at Camp Bowie, Texas, and has been stationed for several months in England. The nurse personnel of the unit has been assigned to other overseas service.

NEW BULLETIN FOR AIR SURGEONS

The *Air Surgeon's Bulletin* made its appearance in January. It will serve as a key source of information for flight surgeons and the many groups of medical department officers working with them, presenting information to the army air forces overseas of the developments, advances and changes emanating from the organization, equipment, training, service and research activities conducted at home. It will also serve as a general medium for official expression of opinions and interpretation.

EXPERT SURGERY ON FRONT LINES LOWERS FATALITIES

The War Department recently announced that hospital fatalities in this war are less than half the number experienced in World War I because the Army has taken surgery to the front lines to insure prompt treatment of wounded men by experts. Hundreds of highly skilled surgeons, trained technicians and surgical nurses are organized today in every theater of operations where American troops are fighting or preparing to fight. They are known as Auxiliary Surgical Groups, and these men and women often work as separate units in collaboration with evacuation hospitals within the combat zone, only a short distance from the fighting lines. They have their own surgical equipment, tents and special trucks which carry sterilizers and an auxiliary power unit to provide current for electric lights. At present an Auxiliary Surgical Group is composed of more than fifty teams and other personnel. Approximately half of them are general surgical teams and the remainder are specially qualified to do orthopedic, maxillofacial, nerve, chest or brain surgery. The personnel of each team varies according to the job it is called on to do. A general team may consist of a general surgeon, an assistant surgeon, an anesthetist, a nurse and two surgical technicians. With them go truck drivers and other assistants needed in the situation confronting them. In jungle areas where no wheeled vehicles can move, they have recently organized portable surgical hospitals the nucleus of which is a slightly larger surgical team than the roving teams in other areas. These teams, composed of four officers and thirty-three enlisted men, load all their instruments, tents, dressings, medicines and other equipment on their backs and transport them as far forward as they are allowed to go. Then they set up their hospitals under canvas and begin operating, applying casts, setting broken legs and arms, giving other medical care—often under shell and rifle fire—and moving men back to the rear as rapidly as their wounds and transportation facilities permit.

In the present war less than 3 per cent of the men wounded in battle die after being admitted to a hospital, compared with 7.4 per cent who died in hospitals in World War I. This record, according to Major Gen. Norman T. Kirk, the Surgeon General, is attributable to prompt and proper surgery, the use of large quantities of blood plasma together with whole blood when it is needed, the use of sulfonamide drugs taken internally and used directly on wounds, competent, adequate nursing care, and rapid transportation to the rear. General Kirk declared that "In contrast to previous wars the present conflict is keynoted by a high degree of mechanization and mobility, and if proper medical aid is to be given to wounded men the surgical teams must keep pace with the attack. The sooner the treatment of the wounded can be instituted, the more successful are the results. As a result of the establishment of the present

system of care and evacuation, the time elapsing between the occurrence of an injury and first aid care averages less than one hour. The time between injury and emergency surgery at an evacuation hospital or clearing station in which surgical teams are operating is less than ten hours. This plan for the care of the injured in the combat zone, which couples speed of evacuation with advancement of hospital facilities, permits not only application of life saving surgical measures but also marked reduction of the serious complications and morbid consequences that would otherwise occur."

MISCELLANEOUS

RED CROSS WAR FUND CAMPAIGN

The 1944 campaign for funds of the American Red Cross will be carried out throughout the country from March 1 to March 31. In order to fulfil its many obligations to the armed forces and people on the home front, the American Red Cross is seeking help to maintain a continuous procession of blood donors to supply some 5 million blood donations during 1944; nurses must be recruited for the Army and Navy at a rate of about 2,500 each month, and Red Cross field directors and other trained personnel must be stationed at military and naval posts and hospitals to help our fighting men and their families when personal trouble arises. The Red Cross must continue to maintain a state of alert on the home front, and disasters must be met as they occur. Nurse's aides and first aiders must be trained and other educational projects continued. Surgical dressings must be made and food parcels for distribution to prisoners of war must be packed. Today the functions of the Red Cross are spread over all the world and must be carried out by a multitude of professional as well as voluntary workers. Since all activities of this organization are financed by voluntary gifts and contributions, the American Red Cross is seeking financial aid in trying to raise its 1944 war fund. Contributions will assure maintenance of all Red Cross services and will help to save many lives.

Poster used in 1944 war fund campaign.

DR. GEORGE BAEHR RETIRES AS CHIEF MEDICAL OFFICER, O. C. D.

The United States Office of Civilian Defense announces the retirement of its chief medical officer, Dr. George Baehr, March 1, after two and a half years of service. He will be succeeded by Dr. W. Palmer Dearing, who has served as assistant chief medical officer since the establishment of the Medical Division of the Office of Civilian Defense.

Many months before the attack on Pearl Harbor, the Medical Division of the Office of Civilian Defense was assigned the responsibility for the protection of the civil population of the country and of its outlying territorial and insular possessions against the hazards of enemy attack and other wartime disasters. In June 1941 Dr. Baehr was authorized by the Surgeon General, U. S. Army, to resign a reserve commission in the Army to accept a commission as medical director in the United States Public Health Service for assignment to the newly created Office of Civilian Defense to organize its Medical Division. Under his direction a staff of technical experts was assembled, regional medical and sanitary engineering offices were established and an emergency medical service was organized in every state and local community throughout the country. An organization for protection against war gases was set up in the coastal states and in the major industrial centers in the interior, many thousands were trained in the technics of rescue work and a program of passive protection and mutual aid for water supply systems and sanitation facilities has been established in all states.

Other achievements of the Medical Division include the establishment of a nationwide system of casualty receiving hospitals, 321 potential emergency base hospitals in twenty coastal states, 180 hospital blood and plasma banks, reserve depots of dried and frozen plasma in 400 cities, more than 120 affiliated hospital units, each consisting of 15 physicians, surgeons and specialists commissioned in the Reserve of the U. S. Public Health Service, and 80 emergency nursing units, each composed of 22 nurses. At the instigation of the Medical Division and with its assistance, 150,000 volunteer nurses' aides have been trained under the Red Cross for wartime volunteer service in hospitals. In recognition of his services to the hospitals of the country in time of war, the American Hospital Association at its recent annual meeting voted a special citation to Dr. Baehr and elected him to honorary membership.

On his retirement as chief medical officer, Dr. Baehr will resume the professional and teaching responsibilities in New York City which he laid down when called to duty in June 1941 in anticipation of the entry of the United States into the world conflict. He is clinical professor of medicine at the College of Physicians and Surgeons of Columbia University, chief of the first medical service at the Mount Sinai Hospital,

New York, and a trustee of the New York Academy of Medicine. In 1915 and 1916 he served in the Balkans and in Russia as a member of the American Red Cross Sanitary Commission to combat epidemic typhus. After our entry into the last war he was called into military service and served in France with the American Expeditionary Forces as commanding officer of Base Hospital No. 3. He has served also in recent years as a member of the Public Health Council of the State of New York, the technical board of the Milbank Memorial Fund, the scientific board of the Institute of Public Health Research and as chairman of the Committee on Public Health Relations of the New York Academy of Medicine.

RUSSIAN WAR RELIEF, INC.

Officers of Russian War Relief, Inc., 11 East 35th Street, New York City, reported that $16,781,333.74 worth of relief supplies were consigned to the Soviet Union during 1943. The American people contributed $7,742,430.32 worth of clothing, seeds, medical supplies and miscellaneous gifts in addition to cash contributions through war chests and the National War Fund. Total administrative, promotion and operating costs, including expenses of more than 400 Russian War Relief committees throughout the country, totaled only 4.43 per cent of income. Medical supplies and clothing comprised the bulk of goods shipped during 1943, according to the agency's report, which showed that 70.07 per cent of shipments were clothing, 20.42 per cent medical and surgical supplies, 4.35 per cent seed and foodstuffs, and miscellaneous relief items such as sewed and knitted garments, watches and medical books. A $21,000,000 goal for 1944 recently announced by the Russian War Relief board of directors will be reached by a continued goods in kind campaign and the purchase of clothing and medical supplies with a $9,000,000 allocation from the National War Fund, Edward C. Carter, president of Russian War Relief, said. He reported that a campaign for 3,000,000 household utility kits recently launched by the agency is already receiving the wholehearted support of Americans and that he was confident the agency would again exceed its own goal for the year.

WARTIME GRADUATE MEDICAL MEETINGS

Additional subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

At the Station Hospital, Fort Niagara, N. Y.: Asthma, Bronchitis and Bronchiectasis, Dr. Harold Schweitzer, March 1; Neurotropic Virus Disease, Dr. David K. Miller, March 15.

At the Halloran General Hospital, Staten Island, N. Y.: External Diseases of the Eye and Glaucoma, Dr. Richard Townley Paton, March 7.

At Camp Upton, New York: Diagnosis and Treatment of Malaria, Dr. Henry E. Meleney, March 6; Clinical Application of Protein Metabolism, Dr. Frank Co-Tui, March 13; Early Diagnosis of Syphilitic Heart Disease, Dr. Edwin P. Maynard Jr., March 20; Cardiac Irregularities, Dr. Harry Gold, April 3.

At Mason General Hospital, New York: Diagnosis and Treatment of Malaria, Dr. Henry E. Meleney, March 6; Clinical Application of Protein Metabolism, Dr. Frank Co-Tui, March 13; Early Diagnosis of Syphilitic Heart Disease, Dr. Edwin P. Maynard Jr., March 20; Cardiac Irregularities, Dr. Harry Gold, April 3.

At Station Hospital, Presque Isle, Maine: Blood Dyscrasias and Transfusions, Dr. Charles S. Davidson, March 16.

At U. S. Naval Hospital, Portsmouth, N. H.: Peripheral Vascular Disease, Dr. Richard H. Wallace, March 16.

At U. S. Naval Hospital, Chelsea, Mass.: The Pneumonias and Other Respiratory Infections, Dr. Maxwell Finland, March 16.

At Cushing General Hospital, Framingham, Mass.: Stomach, Biliary Tract, Intestinal Disorders, Dr. Merrill C. Sosman, Dr. Simeon B. Wolbach, Dr. Francis C. Newton and Dr. E. Stanley Emery, March 16.

At Station Hospital, Camp Myles Standish, Taunton, Mass.: Burns and Reconstruction Surgery, Dr. Joseph H. Shortell, Dr. Francis Taylor and Dr. V. H. Kazanjian, March 16.

At Air Corps Station Hospital, New Haven, Conn.: Acute Infections of the Central Nervous System, Dr. Henry R. Viets, March 16.

At New London, Conn. (U. S. Coast Guard): Cardiac Neuroses, Cardiac Emergencies, Cardiac Rehabilitation, Dr. Paul D. White and Dr. Mandel E. Cohen, March 16.

At Grand Central Palace, New York: Common Skin Diseases in Soldiers, Dr. George C. Andrews, March 17 and 24; Peripheral Vascular Disease, Dr. A. Wilbur Duryee, March 31.

At Camp Shanks, Orangeburg, N. Y.: Management of Peripheral Nerve Injuries, Dr. Bronson S. Ray, March 2; Treatment of Anorectal Diseases in the Army, Dr. Frank C. Yeomans, March 16; Fractures, Dr. Clay Ray Murray, March 30.

At Halloran General Hospital, Staten Island, N. Y.: External Diseases of the Eye and Glaucoma, Dr. Richard Townley Paton, March 7.

At England General Hospital, Atlantic City, N. J.: Yellow Fever, Dr. William G. Sawitz, March 7; Low Back Pain, Dr. Paul C. Colonna, March 21.

NATIONAL NURSING COUNCIL FOR WAR SERVICE, INC.

Tribute was paid in the report presented at the annual meeting of the National Nursing Council for War Service, Inc., New York City, January 25, to volunteer service of home front nurses who are carrying on, largely in their spare time, the work of Nursing Councils for War Service in forty-eight states, the District of Columbia and nearly a thousand local communities. Stella Goostray, superintendent of nursing and principal of the School of Nursing, Children's Hospital, Boston, was reelected chairman of the council. Miss Goostray is also president of the National League of Nursing Education. Other officers elected were: vice chairman, Sophie C. Nelson, director of the Visiting Nurse Service for the John Hancock Mutual Life Insurance Company, Boston; secretary, Minnie Pohe, consultant, division of Nurse Education, U. S. Public Health Service; treasurer, Edward Robinson, treasurer of the Rockefeller Foundation; assistant treasurer, Henry B. Stimson.

State nursing councils for war service now exist in every state and the District of Columbia, and 987 local councils have been organized on city, county and district bases, it was reported. Nineteen of the state councils employ full time executives, and in the other states the state nurses' associations share their executives with the council. All are carrying some responsibility for procurement and assignment and for student recruitment programs. The Committee on Recruitment of Student Nurses, the oldest of the council's twelve committees, is being reorganized under Edith H. Smith, incoming chairman, to include representatives of lay groups assisting most actively with the recruitment program. Major emphasis in the committee's work will in the future be on student guidance.

HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quotas allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL, February 19, p. 516)

CALIFORNIA

St. Joseph's Hospital, San Francisco. Capacity, 244; admissions, 7,218. Sister Mary Raymond, Superintendent (2 assistant residents—mixed).

MONTANA

Murray Hospital Clinic, Butte. Capacity, 100; admissions, 2,785. W. H. Rex, Business Manager (1 intern).

ORGANIZATION SECTION

OFFICIAL NOTES

COUNCIL ON MEDICAL SERVICE AND PUBLIC RELATIONS PROPOSES WASHINGTON OFFICE FOR MEDICAL ECONOMIC RESEARCH

At its meeting in Chicago, February 14 and 15, the Council on Medical Service decided to investigate at once the factors concerned in establishing a Washington office. It was proposed that the Council on Medical Service and Public Relations suggest to the Board of Trustees of the American Medical Association the establishment in Washington, under the auspices of the Council on Medical Service, of an office of medical economic research. This office would be charged with the collection of information and statistical data concerning medical care, its distribution, its availability, its costs and its control in various portions of the United States. The information thus collected will be made available to the medical profession through the publications of the American Medical Association, also to the Bureau of Medical Economics of the American Medical Association for its studies of this problem, and to other appropriate agencies interested in the extension of medical service, the provision of medical care and related subjects. The Board of Trustees has authorized the necessary preliminary steps for this project.

DOCTORS AT WAR

Radio broadcasts of Doctors at War by the American Medical Association in cooperation with the National Broadcasting Company and the Medical Department of the United States Army and the United States Navy are on the air each Saturday at 4:30 p. m. Eastern war time (3:30 Central war time, 2:30 Mountain war time and 1:30 Pacific war time).

The titles and guest speakers for the next three programs are as follows:

February 26. "Share and Share Alike."
Speaker, Col. Rohland A. Isker, O. M. C., U. S. Army.

March 4. "New Life Preserver."
Speaker, Capt. W. M. Craig (MC), U.S.N.R.

March 11. "Battles Won in Laboratories."
Speaker, A. C. Ivy, Ph.D., M.D., Northwestern University.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Change in Status.—S. 1633 has been reported to the House, proposing to amend the nurse training act to authorize the head of any federal agency, department or establishment to request and accept transfers of student nurses to a federal hospital who are transferable under the original act.

Bills Introduced.—The President has transmitted to the Congress a supplemental estimate of appropriation for the Federal Works Agency, in the amount of $150,000,000, to continue the program for the construction of community facilities, including hospitals and health centers (H. Doc. 413). S. 1721, introduced by Senator Wagner, New York, proposes to authorize an appropriation of $80,000,000 for the fiscal year ending June 30, 1945, and such sum as may be necessary for each succeeding fiscal year to enable the Secretary of Agriculture to provide for the maintenance, expansion and operation of school lunch and milk programs. H. R. 4188, introduced by Representative Sikes, Florida, proposes to amend the Railroad Retirement Act to provide annuities for individuals who are totally and permanently disabled and who have completed fifteen years of service. H. R. 4208, introduced by Representative Fay, New York, proposes to establish an executive department to be known as the Department for Veterans, at the head of which will be a Secretary for Veterans appointed by the President by and with the advice and consent of the Senate. H. R. 4216, introduced by Representative Rivers, South Carolina, would direct the Secretary of the Navy to establish a Dental Department in the Navy to function under the Surgeon General. The personnel of the Dental Department, it is proposed, will consist of (*a*) officers of the Dental Corps, one of whom will serve as Director of Dentistry and be directly responsible to the Surgeon General for the administration of dental affairs within the Bureau of Medicine and Surgery; (*b*) chief warrant and warrant officers in numbers not exceeding 5 per cent of the total number of officers in the Dental Corps, and (*c*) enlisted personnel in such ratings and distribution by pay grades within the ratings and in such numbers not to exceed 166 per cent of the dental officers as may be prescribed by the Secretary of the Navy. The Director of Dentistry will be appointed by the President from dental officers on active duty and while so serving will have the rank of rear admiral.

DISTRICT OF COLUMBIA

Changes in Status.—S. 1340 has passed the Senate, to establish a sanitary code governing the operation of restaurants in the District of Columbia. S. 1546 has passed the Senate, amending the law relating to the incorporation of Providence Hospital. The amendment would authorize the hospital to own property in excess of the $150,000 limit contained in the act of incorporation. The hospital would also be authorized to conduct a school for the education and training of nurses and interns with authority to issue suitable certificates evidencing completion of their courses of training. H. R. 2644 has passed the House, granting additional powers to the Commissioners of the District of Columbia. This bill, among other things, would authorize the commissioners to provide for the waiver of payment by any person in the military services of any annual or other periodic fee required by law to be paid to the District of Columbia or to any board or commission as a condition to retaining or renewing any license or permit to engage in any business or calling or to practice any profession in the District of Columbia.

STATE MEDICAL LEGISLATION

Mississippi

Bills Introduced.—S. 145 proposes to authorize the establishment and operation of a state charity hospital and nurses' home to be located in or near Carthage, Leake County, Mississippi, and to be known as the Central Mississippi Charity Hospital and Nurses' Home. House Concurrent Resolution 25 proposes to authorize the appointment of a joint house and senate committee to look into the possibilities of establishing, by means of federal appropriations and private gifts, a tuberculosis sanatorium in one of the centrally located counties in the northern Supreme Court district of the state. H. 173 proposes to change the names of the State Insane Hospital at Whitfield and the East Mississippi State Hospital at Meridian to the State Hospital for the Mentally Ill and to the East Mississippi State Hospital for the Mentally Ill, respectively, and to provide that the supervision and control of each of the two hospitals be under the state board of health. H. 355 proposes to authorize the board of supervisors of any county, in its discretion, to expend not more than $100 on each needy maternity case. H. 359 proposes to repeal the provisions of the criminal code

relating to abortion and to provide a penalty for any person who administers to any woman pregnant with child any medicine, drug or substance whatsoever, or who uses any instrument or other means with the intent to cause the woman to abort or miscarry, and thereby kills or destroys the products of conception, unless the same is necessary to save the life of the mother and has been advised by at least two reputable licensed physicians to be necessary for that purpose. The bill also proposes to require any person who assists in the performance of any operation to empty the uterus of the product of conception and who believes or has reason to believe that such operation is being unlawfully performed immediately to report such operation to the state board of health. The bill also proposes that any person who shall perform any operation by which the uterus is emptied of the product of conception or who shall empty the uterus of the product of conception by administering any medicine, drug or substance whatsoever, within five days after performing such operation or administering such medicine or drug to report the same to the registrar of vital statistics of the state board of health, giving, among other things, the names and addresses of the consulting physicians and the name and address of the hospital or clinic at which the operation was performed or at which the medicine or drug was administered. The bill further authorizes the state board of health to revoke the license of any licentiate convicted of any violation of the bill. H. 385, to amend the law relating to privileged communications, proposes that a patient be deemed to have waived the privilege conferred by statute on him with respect to the information obtained by his physician in attending him if the patient brings an action for damages on account of personal injuries or if the patient offers the physician or any other person as a witness to testify to his physical or mental condition.

New Jersey

Bills Introduced.—A. 55 proposes to enact an entirely new workmen's compensation act, the compensation to be paid out of a state insurance fund. An injured employee is to be entitled to receive "the best available medical, surgical or other attendance, care or treatment, nurse and hospital service, medicine, crutches and apparatus for such period as the nature of the injury or the process of recovery and rehabilitation may require." The injured employee may select to treat him any physician authorized by the state workmen's compensation bureau, which is authorized to administer the act. S. 63 proposes to adopt an act providing for the payment of compensation to employees contracting silicosis or asbestosis by reason by their employment. S. 67 proposes to establish within the department of institutions and agencies a division whose duty will be to study the cause, mortality rate, treatment, prevention and cure of cancer and allied diseases. The department is to organize cancer clinics throughout the state and to provide for the care, treatment and prevention of cancer. Any person residing within the state for one year or more is to be eligible to receive without cost treatment contemplated by the bill. S. 74 proposes to permit any person holding a license to practice medicine and surgery in the state and who does not possess a degree of doctor of medicine to certify to the insanity of patients for admission to state and county mental hospitals.

South Carolina

Bills Introduced.—H. 878 proposes to create the Beaufort County Hospital Association to operate a hospital in Beaufort County for the treatment of charity and pay patients. H. 886 proposes to establish a hospital district in Charleston County to be known as the Cooper River Hospital District, which district is to be authorized to erect and maintain a hospital or hospitals. H. 946 proposes to authorize the establishment of nonprofit corporations to maintain and operate nonprofit hospital service plans whereby hospital care may be provided through established hospitals holding membership in the South Carolina Hospital Association or approved by the corporations in question.

Virginia

Bills Introduced.—S. 165, to supplement the medical practice act, proposes, in effect, to require the board of medical examiners to file with the secretary of the commonwealth a copy of the questions of each examination given by it within ten days after the examination. S. 170, to amend the uniform narcotic drug act, proposes so to define the term "narcotic drug" as to embrace "Isonipecaine," which the bill defines as "the substance identified chemically as 1-methyl-4-phenyl-piperidine-4-carboxylic acid ethyl ester, otherwise known as Demerol, or any salt thereof by whatever trade name identified."

WOMAN'S AUXILIARY

Colorado

The Denver County auxiliary recently held a meeting at the Nurses' Home of the General Hospital in Denver. After the business meeting Oscar Wilde's book "Skin of Your Teeth" was presented. The auxiliary prepares dressings and bandages for the Colorado Society for the Control of Cancer and sews weekly for the Red Cross.

Michigan

The executive board of the Michigan auxiliary held its eighteenth midyear meeting and luncheon recently in Detroit. Mrs. John J. Walch, state president, urged two objectives for the year: (1) the cooperation of all members to defeat the Wagner-Murray-Dingell bill and (2) to aid in the nationwide campaign to recruit girls for the nursing profession.

The Jackson County auxiliary sent thirty-two Christmas boxes to members of the Jackson County Medical Society in service. St. Clair County auxiliary showed the film "R.N. Serving All Mankind" to senior high school girls in the county.

New Jersey

A report of the New Jersey auxiliary was recently published in the *Journal of the Medical Society of New Jersey*. Mrs. Asher Yaguda, president, said that the national chairman of public relations mentioned a New Jersey project planned by Mrs. Maclyn Baker. It is the afghan square "knitting while waiting" idea. Afghan squares begun with necessary needles and wool are placed in doctors' offices, and patients knit while waiting.

Members of the Mercer County auxiliary were hostesses to the state auxiliary on January 10 at a business meeting and buffet luncheon.

The Middlesex County Auxiliary, as part of its public relations program, has become members of the Public Forum of New Brunswick and vicinity.

The Ocean County auxiliary has a program this year of discussions on current medical subjects and book reviews. Its efforts are centered on helping the Blood Transfusion Fund.

The Essex County auxiliary and the Contemporary Club of Newark heard Dr. Quigley's talk on medical legislation. His subject was "Present Governmental Activities in the Field of Civilian Medicine."

Oklahoma

The Tulsa County auxiliary sponsored a picture for the recruitment of nurses at the Central High School. A talk was given to the girls by Mrs. C. H. Haralson on the value of nursing as a profession. The auxiliary entertained the wives of doctors in the service and honorary members.

Virginia

The Norfolk County auxiliary voted to sponsor a recreation room for one of the 375 camps in the area. At a recent meeting Mrs. J. W. Reed read a paper on "Contribution to Modern Medical Science Made by Jane Todd Crawford."

The Accomac-Northampton auxiliary again won the silver vase for the largest percentage of attendance at its meetings. The vase, engraved with their name, will be on display at the Northampton-Accomac Hospital.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARIZONA

State Medical Meeting.—The annual meeting of the Arizona State Medical Association will be held at the Hotel Westward Ho, Phoenix, April 14-15. A program will be presented by members of the faculty of the University of Southern California School of Medicine, Los Angeles.

Arizona Medicine.—The official journal of the Arizona State Medical Association, *Arizona Medicine*, made its appearance with the January-February issue. On the president's page Dr. Otto E. Utzinger, Ray, president of the state association, submits an appeal against the Wagner-Murray-Dingell bill.

COLORADO

Gift of Radium for Indigent Patients.—Fifty-five mg. of radium has been given by the Dr. Alfred Freudenthal Foundation to the Colorado Branch of the American Society for the Control of Cancer. The radium will be placed with a committee appointed by the state medical society, which, in cooperation with Dr. Roy L. Cleere, secretary of the Colorado State Board of Health, will make it available for the exclusive use of indigent cancer patients in Colorado free clinics, according to the *Bulletin* of the American Society for the Control of Cancer. Dr. Freudenthal died in Denver, Dec. 22, 1940.

CONNECTICUT

Professorship in Nutrition Created at Yale.—George R. Cowgill, Ph.D., associate professor of physiologic chemistry, Yale University School of Medicine, New Haven, is the first incumbent of a newly created professorship in nutrition at Yale. Dr. Cowgill was a pupil of the late Lafayette B. Mendel, Sc.D., and has been a member of the department of physiologic chemistry since 1921.

ILLINOIS

Chicago

Dr. Wiggers to Address Heart Association.—Dr. Carl J. Wiggers, professor of physiology and head of the department, Western Reserve University School of Medicine, Cleveland, will address the annual meeting of the Chicago Heart Association at Huyler's Restaurant, February 29. His subject will be "Some Cardiovascular Aspects of Shock and Transfusion."

Anniversary of Psychiatric Institute.—A dinner will be held at the Standard Club, February 29, to observe the thirtieth anniversary of the Psychiatric Institute of the Municipal Court of Chicago. Charles W. Gilkey, D.D., dean of the Rockefeller Memorial Chapel, University of Chicago, will be the toastmaster. Dr. Harry Stack Sullivan, William Alanson White Foundation, Washington, D. C., will be the principal speaker. Among the speakers will be:

Hon. Edward J. Kelly, mayor of the city of Chicago.
Hon. Edward S. Scheffler, chief justice, Municipal Court of Chicago.
Hon. John P. McGoorty, judge of the Superior Court, Cook County.
Mr. Russell Ballard, director, Hull House, Chicago.
Dr. David B. Rotman, director, Psychiatric Institute of the Municipal Court of Chicago.

A feature of the meeting will be the presentation of a commemorative volume reviewing the history of the Psychiatric Institute, set up in 1914 by Chief Justice Harry Olson, who died in 1935. The first director was the late Dr. William J. Hickson, who was succeeded in 1929 by Dr. Meyer Solomon, associate in nervous and mental diseases, Northwestern University Medical School. Dr. Rotman became director in 1931.

INDIANA

Typhoid Outbreak Traced to Food Product.—A food product which is believed to be the source of a typhoid epidemic in north central Indiana is being removed from the market "as quickly as possible," state health officials reported February 11. It was stated that the name of the product or of the company manufacturing it was not disclosed, but it was indicated that "parties directly and indirectly connected with its production and distribution are giving wholehearted cooperation in the removal of the product from the market." A total of 162 typhoid cases had been reported up to February 11, with six deaths.

Personal.—William H. Headlee, Ph.D., recently appointed head of the division of tropical medicine and parasitology at Indiana University School of Medicine, Indianapolis, will leave in March to conduct a study of tropical diseases in Guatemala, Honduras and Costa Rica. Dr. Headlee was chosen for the work by the Association of American Medical Colleges, the study to be financed by the Markle Foundation in cooperation with the army medical corps.——Dr. Albert Fisher, North Judson, has been named health officer of Starke County, succeeding Dr. William J. Solt, San Pierre.——Dr. James C. Stafford, Plainfield, has been appointed coroner of Hendricks County to succeed Dr. Samuel Joseph Smith, who resigned when he moved to Indianapolis.

MICHIGAN

Advisory Group for Tuberculosis Control.—Announcement is made of members of an advisory committee of the Michigan Sanatorium Association named to work with state health authorities in coordinating institutional tuberculosis control measures. Members of the committee are Drs. Paul T. Chapman, director of tuberculosis hospitalization and field service of the Herman Kiefer Hospital, Detroit, chairman; John B. Barnwell, director of the tuberculosis division of the University Hospital, Ann Arbor; Willard B. Howes, medical director of the Detroit Tuberculosis Sanatorium; Edward W. Laboe, superintendent of the Michigan State Sanatorium at Howell, and Charles R. Smith, medical superintendent of the Copper Country Sanatorium at Houghton. The committee is to meet at least twice annually with representatives of the bureau of tuberculosis control of the state department of health for discussions of present and postwar problems.

Industrial Medical and Surgical Conference.—The Michigan State Medical Society will hold its annual postgraduate industrial medical and surgical conference at the Horace A. Rackham Educational Memorial, Detroit, April 6. Among the speakers will be:

Mohe E. Solworth, Louisville, Ky., sanitation consultant, Newer Trends in Industrial Sanitation.
Dr. Leonard E. Himler, Ann Arbor, The Psychiatric Approach to Current Mental Health Problems in Industry.
Samuel Peck, senior surgeon, U. S. Public Health Service Reserve, How to Control Epidemics of Occupational Dermatitis, with Special Emphasis on the Epidermophytoses.
Dr. Charles-Francis Long, Philadelphia, Criteria for Employability of Individuals with Lung Pathology.
Dr. Marion W. Jocz, Detroit, Inplant Rehabilitation Programs for Disabled Veterans.
Dr. Melvin H. Pike, Midland, Eye Pathology Due to Exposure to Organic Solvents.
Dr. Carl A. Moyer, Ann Arbor, A Comparison of Various Salt Solutions in the Treatment of Burns.
Dr. John W. Hirshfeld, Detroit, Clinical Uses of Penicillin.

Dr. Kenneth E. Markuson, Lansing, chairman of the meeting, will give an address of welcome, and a luncheon session will be addressed by Major Frank H. Mayfield, M. C., A. U. S., on peripheral nerve injuries. The meeting is sponsored by the committee on industrial health of the state medical society and the Michigan Association of Industrial Physicians and Surgeons in cooperation with the department of postgraduate medical education of the University of Michigan, Ann Arbor, and the Wayne University College of Medicine.

MISSOURI

Personal.—Dr. Evarts A. Graham, Bixby professor of surgery, Washington University School of Medicine, St. Louis, was granted honorary fellowship in the Royal College of Surgeons of England at a ceremony in the British embassy in Washington, November 8.

Unapproved Medical School Surrenders Charter.—The Kansas City University of Physicians and Surgeons has agreed to surrender its charter and stop functioning June 1, it is reported. The school is said to teach both medicine and osteopathy, granting advanced standing in medicine to osteopathic students. It has not been recognized by the American Medical Association since 1928.

Radiologic Information.—A symposium on radiologic information was presented on January 25 by members of the Kansas City Radiological Society. Among the speakers were:

Dr. Charles Edgar Virden, Dangers of Fluoroscopy.
Dr. Galen M. Tice, Kansas City, Kan., Carcinoma of the Lung.
Dr. Lewis G. Allen, Kansas City, Kan., Radiation Therapy in General Practice.
Dr. David S. Dann, X-Ray Examination of the Heart and Aorta.
Dr. Everett R. Deweese, Study of the Gastrointestinal Tract.
Dr. Louis A. Scarpellino, Intravenous Pyelography.
Dr. Edward H. Skinner, Cell Type Knowledge in Tumor Therapy.

Dr. Ira H. Lockwood conducted the seminar, and Drs. Clyde O. Donaldson and Oliver H. McCandless participated in the discussion.

NEW JERSEY

State Surgeons Meet.—The Society of Surgeons of New Jersey was addressed at a meeting in the Claridge Hotel, Atlantic City, January 29-30, among others by Dr. Charles H. deT. Shivers on "Rhabdomyosarcoma of the Spermatic Cord"; Dr. Homer I. Silvers, "Three Major Lesions of the Colon"; Major George E. Chittenden, M. C., A. U. S., "A New Approach to the Varicocele Problem," and Col. James P. Cooney, M. C., U. S. Army, "Unusual Roentgen Findings of Interest to the Surgeon."

Course in Tropical Diseases. — Dr. Arthur W. Grace, professor of clinical dermatology and syphilology, Long Island College of Medicine, Brooklyn, is conducting a course in tropical diseases in Newark under the auspices of the state department of health. The lectures, which opened February 16, will be given on alternate Wednesday evenings. A companion course in the parasitology of the diseases considered will be conducted by Thurlow C. Nelson, Ph.D., at New Brunswick on Saturday afternoon following each lecture by Dr. Grace. This course is open only to those registered in the lecture course.

NEW YORK

Personal. — Dr. N. Stanley Lincoln, since 1936 medical superintendent of the Mount Morris Tuberculosis Hospital, Mount Morris, has been transferred to a similar position at the Hermann M. Biggs Memorial Hospital, Ithaca, succeeding Dr. John K. Deegan, who has entered military service. Dr. Arthur M. Stokes, assistant superintendent of the Homer Folks Tuberculosis Hospital, Oneonta, has been named to succeed Dr. Lincoln at Mount Morris.——Dr. Paul H. Mahany, Albion, has been named coroner of Orleans County to fill the unexpired term of Dr. Ralph E. Brodie, Albion, who died January 9. —— Dr. Eugene W. Bogardus, superintendent of Onondaga Sanatorium since 1940, has resigned, effective March 1, to become head of the medical department of the Reader's Digest Company, Pleasantville.

Graduate Lectures. — Dr. Foster Kennedy, professor of clinical medicine (neurology), Cornell University Medical College, New York, will address the Jefferson County Medical Society in Watertown and the St. Lawrence County Medical Society in Ogdensburg, March 9, on "Neuroses: Related to the Manic-Depressive Constitution." Dr. Ellery G. Allen, associate professor of clinical medicine and associate professor of clinical pathology, Syracuse University College of Medicine, Syracuse, will address the Cortland County Medical Society, Cortland, March 17, on "Diagnosis and Treatment of Anemia." Dr. James E. McCormack, New York, will address the Onondaga County Medical Society and the Syracuse Academy of Medicine, March 7, Syracuse, on "Penicillin Therapy." The lectures are a part of a postgraduate endeavor sponsored by the state medical society and the state department of health.

New York City

Dr. Loewi to Give Rothschild Lecture.—Dr. Otto Loewi, research professor of pharmacology, New York University College of Medicine, will present the Rothschild Lecture at Beth Israel Hospital, March 28, on "The Chemical Transmission of Nervous Impulse."

Meeting on Plastic Surgery.—At a meeting of the American Otorhinologic Society for the Advancement of Plastic and Reconstructive Surgery, February 25, at the New York Academy of Medicine, the following, among others, spoke:

Dr. Jacob Daley, Retaining a Correct Septolabial Angle in Rhinoplasty.
Dr. Matthew S. Ersner, Philadelphia, Nasal Injury in Dystocias.
Dr. Bruno L. Griesman, Muscles and Cartilages of the Nose from the Standpoint of a Typical Rhinoplasty.
Dr. Harold S. Vaughan, Surgical Correction of Congenital Lip Deformities.

Dr. John M. Converse of the American Hospital in Britain showed a film on "Reconstruction of Nose by Epithelial Inlay."

OHIO

Annual Cancer Institute. — The Ohio Division of the Women's Field Army of the American Society for the Control of Cancer sponsored its annual institute at the Deshler-Wallick Hotel, Columbus, February 2. Among the speakers were S. Gertrude Bush, R.N., Columbus, chief, division of public health nursing, Ohio Department of Health, on "Functions of the Public Health Nurse in the Cancer Control Program"; Mrs. Harold V. Milligan, national commander, "The Future of the Women's Field Army in the United States"; Dr. Clifford C. Sherburne, Columbus, president, Ohio State Medical Association, "The Physician and the Cancer Control Program," and H. D. Fish, assistant managing director, American Society for the Control of Cancer, "The Cancer Control Program in Secondary Schools."

Governor's Committee for Study of Mental Health.—On January 3 the "Governor's Committee on the Mental Health Program for Ohio" held its first meeting. Hal H. Griswold, Cleveland, attorney and former director of the state department of public welfare, was chosen chairman of the new group, and Leonard W. Mayo, dean of the School of Applied Social Sciences, Western Reserve University, Cleveland, vice chairman. Provision was made for the employment of a secretary. The committee was originally set up to formulate a mental health program for Ohio and at the recent meeting recognized three main divisions of the governor's assignment: the mentally ill, including the epileptic; the feebleminded, or mentally deficient, and the defective delinquent and psychopathic. Subcommittees were appointed on each of these three divisions as well as a subcommittee to coordinate their work. Recommendations will be made in each field concerning the prevention, treatment, education, research, institutional and other personnel, buildings and equipment, and pertinent statutes. It was agreed that the committee (THE JOURNAL, January 22, p. 248) and the advisory council to the state division of mental diseases would act as a single committee to be known as the "Governor's Committee on the Mental Health Program for Ohio."

PENNSYLVANIA

Personal.—Dr. Richard J. Behan, Pittsburgh, has recently returned from an eight weeks trip to Mexico and Guatemala, where he studied the relationship of precolumbian and modern medicine.

Philadelphia

Personal.—Dr. Myer Solis-Cohen was recently appointed assistant director of public health of Philadelphia. Drs. Harrison F. Flippin and John D. McLean have been appointed members of the board of health.——Dr. Stephen E. Tracy, medical director of the Stetson Hospital for twenty-five years and associated with the institution for forty-one years, retired December 31. He has been succeeded by Dr. John D. Paul.

Special Lectures. — The Philadelphia County Medical Society plans a symposium on the "Early Diagnosis of Cancer" to be presented, March 8, under the auspices of the committee on cancer control. On April 5 Dr. Eugene M. Landis, professor of physiology, Harvard Medical School, Boston, will present the Mary Scott Newbold Lecture of the Philadelphia College of Physicians. He will discuss "The Hypertension Problem."

Dinner to Dr. Reeves. — On January 26 Dr. Rufus S. Reeves, recently appointed director of health of Philadelphia, was guest of honor at a dinner given by Dr. Anthony Sidoni Jr. Guests at the dinner included the mayor of Philadelphia and the chairmen of all the advisory committees to the director of health. As a result of an announcement at the dinner that in one Philadelphia school there appeared a mild epidemic of ringworm of the scalp among the children, steps are being taken to include tinea circinata, designated as reportable, on the communicable disease postal card.

SOUTH CAROLINA

Congressmen Oppose Wagner Bill.—The house of representatives of South Carolina on January 25 adopted a concurrent resolution by Representative Horne of Richland opposing the Wagner-Murray-Dingell bill.

Personal.—Dr. Isadore Schayer, Columbia, has been retired from the army (national guard), in which he was lieutenant colonel and post surgeon at Fort Moultrie, and has returned to his duties as professor of hygiene at the University of South Carolina, Columbia, it is reported. Dr. Schayer, who had a leave of absence from the university, reached the retirement age of 64 on May 1, 1943 but was retained on active military duty by a presidential order.

TEXAS

Meeting of Pathologists.—Dr. Paul Brindley, Galveston, was chosen president-elect at the semiannual meeting of the Texas Society of Pathologists, Dallas, January 30, and Dr. Albert H. Braden, Houston, was inducted into the presidency. Other officers include Dr. May Owen, Fort Worth, vice president, and Dr. John J. Andujar, Fort Worth, secretary-treasurer. The next meeting of the society will be held in San Antonio, May 4. At the recent meeting a complete code of ethics was drawn up, stress being laid on the urgent necessity of remedying the unfortunate practice of medical specialties by lay institutions. A resolution of protest was adopted on the teaching of medical technology by undergraduate colleges devoid of clinical facilities or medical supervision.

Professorship of Pathology Endowed at Baylor.—The Fulbright professorship of pathology has been endowed at Baylor University College of Medicine, Houston, under a contract executed between Mrs. Irene Fulbright, widow of R. C. Fulbright of Houston and Washington, and the Houston executive committee of the board of trustees of Baylor University, according to *Medical Record and Annals*. Under the agreement Mrs. Fulbright will make an annual cash contribution toward the expense of the professorship and has agreed to make the endowment permanent by naming Baylor University College of Medicine as the legatee of her estate on her death. Both Mr. and Mrs. Fulbright were students at Baylor. Mr. Fulbright during his life created a trust estate to become the property of the college of medicine after certain stipulations had been fulfilled. In the recent agreement it was provided that the trust fund by Mr. Fulbright will be used jointly with the funds to the college from Mrs. Fulbright to take care of the expense of the professorship. It is also provided that if the income from the funds amounts to more than the cost of the professorship the excess will go to the department of pathology to be used for maintenance, equipment and supplies.

WEST VIRGINIA

Cancer Assembly.—The fifth state assembly of the West Virginia Division of the Women's Field Army of the American Society for the Control of Cancer will be held March 2-3 at the Daniel Boone Hotel, Charleston. Among the speakers will be:

Mrs. Harold V. Milligan, national commander (subject not announced).
Dr. Chauncey B. Wright, Huntington, The Diagnostic Tumor Clinic.
Dr. John E. Offner, Weston, state health commissioner, The Cancer Control Division of the State Health Department.
Dr. Walter E. Vest, Huntington, The Function of the Public Health Council.
Mr. J. Louis Neff, Long Island, N. Y., executive director, American Society for the Control of Cancer (subject not announced).

Medical Society Approves Service Plan.—The Kanawha Medical Society has approved the medical-surgical plan now being administered in the Charleston area by Medical Service, Inc. The plan conforms with the basic contract approved for the use of component societies by the fact finding and planning committee of the West Virginia State Medical Association. The resolution formally approving the local plan provides that a committee from Kanawha Medical Society work with the board of directors of Medical Service, Inc., in an advisory capacity and recommends that the fee for medical visits in hospitals be increased to $3 as soon as it is reasonably possible to do so. The plan now provides a fee of $2.50 for such visits, which are limited to one each day.

GENERAL

Society News.—The governing board of the American Gastroenterological Association has announced that its annual meeting will be held at the Drake Hotel, Chicago, June 12-13. Dr. J. Arnold Bargen, Rochester, Minn., is the secretary.—The American Dietetic Association will hold its twenty-seventh annual meeting at the Stevens Hotel, Chicago, October 17-19.

Fraudulent Salesmen Apprehended.—Two men, Henry Lee Scott and Ramage William Anderson, have been apprehended in Memphis, Tenn., and the records show that Mr. Scott, who weighs 220 pounds and is 58 years old, has operated under the names of R. T. Patterson, R. W. Lee, D. C. Miller, Bob Scott, R. L. Scott and Dr. C. D. Miller. Anderson has used the names of H. A. Johnson and Bill Anderson. They were selling a product alleged to be useful in allergy and claiming to be agents of a widely advertised medicine firm dealing in glandular products

The Squibb Award.—The E. R. Squibb & Sons Award for 1944, consisting of $1,000, is now available for assignment to an investigator or investigators in the United States or Canada for an outstanding contribution in endocrinology. Choice of the recipient will be made by the committee of awards of the Association for the Study of Internal Secretions. Nominations should be sent in as soon as possible and should be accompanied by a list of publications (and five reprints if possible) addressed to the secretary of the association, Dr. Henry H. Turner, 1200 North Walker Street, Oklahoma City.

Annual Report of Commonwealth Fund.—Forty-one different pieces of research were supported by the Commonwealth Fund at eleven university schools of medicine and eight other institutions of research rank during the fiscal year ended Sept. 30, 1943, according to its annual report. Three of the forty-one projects were entirely new to the fund during the year; three had been subsidized for ten years or longer, the rest for periods ranging from one to seven years. Current gifts for the projects amounted to $395,749. The income of the fund for the year was the smallest since 1936, and appropriations, at a total of $1,503,124 were the smallest for many years. During the year $1,555,718.86 was disbursed. Two projects were abandoned because of the loss of key investigators: the study of a diagnostic technic for cancer of the stomach in the department of surgery at Columbia University College of Physicians and Surgeons, New York, and the experimental phases of a study of radioactive phosphorus in the treatment of cancer at the Institute of Radiology, Washington University School of Medicine, St. Louis. Half of the undertakings aided by the fund have a bearing on war medicine. New projects this year included the study of Dr. Max B. Lurie at the University of Pennsylvania School of Medicine in his study of the physiologic factors responsible for differences in resistance to tuberculosis, with inbred rabbits as the test animal; Dr. W. Barry Wood Jr., Washington University, in his study of the physiologic mechanisms responsible for recovery from certain types of pneumonia, and Selman A. Waksman, Ph.D., microbiologist, New Jersey Agricultural Experiment Station, in an intensified investigation of substances recovered or recoverable from the molds, fungi or bacteria which might be useful in the control of pathogenic agents. In the field of medical education only five of the advanced fellowships customarily offered by the fund for junior instructors in medical schools were awarded and only four became effective. The fifth award was an extension of a special fellowship provided for Dr. Fridgeir Olason of the University of Iceland to complete a course of public health study at Harvard University. Assistance to the field of medical education is also reflected in the grants for study of mental health, one of the newer contributions being used to set up a special service at the Payne Whitney Psychiatric Clinic of the New York Hospital for men discharged for psychiatric reasons after induction. A special course for penal psychiatrists at the University of Pennsylvania was abandoned for the time being for lack of candidates. The fund also began a six year series of appropriations to the Long Island College of Medicine to help build up a strong department of psychiatry. The bulk of the psychiatric teaching will be done not in phychiatric wards or clinics but in the medical service, in the belief that "in presenting psychiatry to medical students the subject matter should be continuously oriented to the general practice of medicine rather than to the practice of psychiatry as a specialty." For the past year there have been no Commonwealth Fund fellows from Great Britain or the British commonwealth. Latin American fellowships in medicine and public health, inaugurated two years ago for postgraduate study in the United States, have given every indication of usefulness. Under this plan three men from Argentina, two each from Brazil, Uruguay and Venezuela, and one each from Chile, Colombia, the Dominican Republic, Ecuador, Haiti and Honduras hold appointments for the current academic year. Awards are made with the cooperation of the Pan American Sanitary Bureau. According to the report these Latin American fellows "are well trained, energetic, eager to improve themselves and almost without exception are either holding or preparing to hold positions of responsibility in public health and clinical medicine."

Commenting on its program of assistance to rural hospitals, the report states that the hospitals on the whole are doing well under difficulties. Of the thirteen at work on Jan. 1, 1943 seven had taken in by the end of August, in payment for services rendered, more cash than the total of their operating expenses, and several had accumulated substantial surpluses. Nearly all were comfortably full and some were uncomfortably crowded. In the six older hospitals, taken together, two thirds of the normally available beds were, on the average, continuously occupied, while in the seven newer institutions the percentage of occupancy ranged from 52.5 to 89.6, the optimum in hospitals of this size being in the neighborhood of 65 per cent. Collections ranged from just under 90 per cent in the newest of the hospitals to more than 101 per cent in three of the older ones, indicating that clients were not only meeting their current obligations but paying off old debts. Only one hospital gave as much as 17.5 per cent of its total service to patients unable to pay their own bills, and most of them were able to meet current demands by allocating less than 10 per cent of their services to this group.

War relief accounted for $390,000, medical education $34,650 and medical research $324,462.17. Appropriations covering the division of education, rural hospitals, public health, health studies, mental hygiene, mental hygiene in England, publications, a library and legal research totaled more than $659,412.18.

Government Services

Changes in Public Health Service

The United States Public Health Service recently announced the following changes in status:

To be temporary surgeons:

Aaron W. Christensen	James F. Lane
Robert F. Martin	John N. Bowden
Theodore McC. Burkholder	Ralph B. Hogan
Theodore L. Perrin	Vernon B. Link
Harris Isbell	Norman H. Topping
Rolla R. Wolcott	Michael B. Shimkin

To be temporary senior surgeons:

Noka B. Hon	Samuel J. Hall
Hiram J. Bush	Maurice A. Roe
Eddie M. Gordon Jr.	Paul A. Neal
Walter P. Griffey	Kenneth R. Nelson
Albert T. Morrison	Vane M. Hoge

Dr. Erval R. Coffey has been made temporary medical director and Drs. Norman W. Wagner and Walter S. Mozden assistant surgeon.

New Appointments by Surgeon General

The following appointments have been made by Surg. Gen. Thomas Parran, effective December 1:

Assistant Surgeon General Lewis R. Thompson, in charge of the Bureau of State Services.

Assistant Surgeon General Rolla E. Dyer, director of the National Institute of Health.

Assistant Surgeon General Ralph C. Williams, in charge of the Bureau of Medical Services.

Assistant Surgeon General (Dental) William T. Wright Jr., chief of the Dental Division.

Assistant Surgeon General (Sanitary Engineering) John K. Hoskins, chief of the sanitary engineering division.

Medical Director Paul M. Stewart, chief, Division of Commissioned Officers, effective January 1.

Medical Director Lawrence Kolb, chief, Mental Hygiene Division, effective January 1.

Medical Director Joseph W. Mountin, chief, States Relations Division, effective January 1.

Medical Director William F. Ossenfort, chief, Hospital Division, effective January 1.

Medical Director Gilbert L. Dunnahoo, chief, Foreign Quarantine Division, effective January 1.

Annual Report of Veterans Administration

Legislation passed during March 1943 materially increased the activities of the Veterans Administration, according to its annual report for the fiscal year ended June 1943. The legislation grants to veterans of World War II hospitalization, domiciliary care and burial benefits on a parity with World War I veterans and provides for the rehabilitation of disabled veterans of World War II. The report states that the accredited military population for World War II is at least three times that of World War I, which was 4,757,240. Aside from carrying out its own responsibilities, the Veterans Administration continued its policy of cooperating with the armed forces in conducting laboratory examinations for army induction boards, allocating certain buildings at its field facilities for army use and arranging to have members about to be separated from active service for disabilities for which further hospitalization is indicated admitted immediately on discharge to Veterans Administration facilities to continue their treatment.

The total hospital load of the Veterans Administration during the fiscal year was 56,897 as compared with 56,346 on June 30, 1942, an increase of 551. The neuropsychiatric load increased 1,710 and the tuberculous 76, while the general load decreased 1,235. At the close of the recent fiscal year 74.98 per cent of the United States veterans under hospitalization were receiving treatment for disabilities not of service origin, as compared with 76.82 per cent on June 30, 1942. The total patient load at the expiration of the 1943 period consisted of 56,641 United States veterans, classified by service as follows: World War I, 45,653; World War II, 5,132; Spanish-American War, 2,871; Civil War, 17; all other wars, expeditions and occupations, 48, and Regular Establishment, 2,920. There were 14,172 United States veterans under treatment for diseases or injuries determined to be of service origin, of whom 9,892 had service in World War I, 2,332 in World War II, 21 in the Spanish-American War, 1,926 in the Regular Establishment during peacetime and 1 in other wars, occupations or expeditions. Included in the 56,641 United States veterans are 390 female and 5,427 colored beneficiaries. Of the patients in hospitals at the close of this year, 8.82 per cent were under treatment for tuberculosis, 64 per cent for neuropsychiatric diseases and 27.18 per cent for general medical and surgical conditions. Since March 3, 1919, when the acquisition of government hospital facilities was first authorized for the treatment of veterans of World War I, there have been 2,735,244 admissions of United States veterans to hospitals, of which 160,234 were made during this year, a decrease of more than 10 per cent from 1942. Since June 7, 1924, when hospitalization was first authorized for the veterans of all wars without regard to the origin of their disabilities, 1,862,965, or more than 80 per cent of all admissions, have been for the treatment of disabilities not connected with service. Over 92 per cent of the admissions this year were on account of nonservice connected disabilities. During this year 9,835 admissions were authorized for the observation and treatment of pulmonary tuberculosis, 9,952 for psychotic or mental diseases, 12,642 for other neurologic disorders and 127,805 for general medical and surgical conditions. During this fiscal year 223,963 patients were under hospitalization, of whom 216,485 were United States veterans. The total number of patients treated represents a decrease of 7.51 per cent over 1942. Of the United States veterans treated 159,844 were discharged after an average of 80.7 inpatient days. Deaths in hospitals during this year totaled 13,483, or 8.43 per cent of the discharges, as compared with 12,977, or 7.09 per cent in 1942. Of the total deaths 9,851, or 73.06 per cent, occurred among patients under treatment for general conditions; 1,922, or 14.26 per cent, for pulmonary tuberculosis, and 1,710, or 12.68 per cent, for neuropsychiatric diseases. On June 30, 1943 the Veterans Administration was operating hospital facilities at ninety-three locations in forty-five states and the District of Columbia. These facilities had a capacity of 61,764 beds, a decrease of 689 in the number available June 30, 1942, owing to the fact that 1,004 beds at Los Angeles were turned over to the War Department for use by the Army. At the expiration of the recent fiscal period the Veterans Administration was utilizing 1,693 beds in other government hospitals, distributed by branch of service as follows: Army, 347; Navy, 627; Federal Security Agency, 719 (Public Health Service, 641 and St. Elizabeth's, Washington, D. C., 78). On June 30, 1943 there were 18,455 beds set aside for domiciliary care in facilities under the jurisdiction of the Veterans Administration, as compared with 18,371 on June 30, 1942, an increase of 84 beds. The total number of beds in facilities controlled by the Veterans Administration on June 30, 1943 was 80,219, as compared with 80,824, a decrease of 605 beds during this fiscal year. On completion of new construction for which funds were available on June 30, 1943 there will be 66,977 hospital and 18,590 domiciliary beds, a combined total of 85,567, in Veterans Administration facilities. Adding to the latter the total of 1,693 beds in use in other government hospitals and the 973 in civil and state hospitals, there results a combined total of 88,233 beds of all types for beneficiaries of the Veterans Administration. At the close of the fiscal year work was in progress on twenty-two projects involving additional beds. The average age of the World War II veterans at time of death was approximately 26 years. The greatest causes of death reported in this group were 3,516 killed in action or died of wounds received in action, 1,604 air transport accidents (exclusive of action) and 620 motor vehicle accidents.

The net operating expense for all hospital domiciliary facilities controlled by the Veterans Administration totaled $71,272,687.13 of which $65,683,999.47 was for hospital and $5,588,687.65 for domiciliary facilities. This amount does not include expenditures for new construction, betterments, structural alterations undertaken for preservation of buildings, maintenance and operation of personnel quarters, nonexpendable equipment, furniture and furnishings, or those for the diagnostic centers at San Francisco and at Hines, Ill. Throughout the year there was a daily average of 53,470 patients of all types under treatment and a daily average of 10,430 beneficiaries receiving domiciliary care, as compared with 54,636 and 14,371 respectively during the fiscal year 1942. The per diem cost of operation for hospital facilities used principally for the treatment of tuberculosis was $5.04, for those used exclusively for the treatment of neuropsychiatric diseases $2.23, and for those used largely for the treatment of general medical and surgical conditions $5.20. Collectively the per diem cost of operation for hospital facilities of all types was $3.37. The per diem cost of operation for domiciliary facilities for this year was $1.47. During the year the outpatient units at field stations made a total of 812,992 physical examinations, a decrease of 120,820 in the number accomplished during the preceding year. Of the examinations, 800,413 were medical and 12,579, or 2 per cent, were dental. About 99.6 per cent of the medical and 91.9 per cent of the dental examinations were made by physicians and dentists on a salary basis.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 22, 1944.

Alliance of British and American Science

The proposals made by the Imperial College of Science and Technology, London, were accepted by the president of the Massachusetts Institute of Technology, Dr. Karl Compton, during his visit to this country. Under the proposals, each institution extends hospitality during their visits to members of the other. The work of the two institutions is to some extent complementary. In general the British bent has been toward pure science while the American bent is toward the practical applications of science. The rector of the Imperial College, R. V. Southwell, states in a letter to the *Times* that the difference is cause for the more satisfaction that his college should thus be recognized as "the opposite number" of the Massachusetts Institute and that the alliance is an earnest of the college's intention to develop advanced technologic instruction and research to the utmost after the war.

The *Times* points out that the growing collaboration of British and American scientists is symbolic of growing appreciation that the world of learning can recognize no frontiers of race, nationality or religion. All learned bodies in Britain have always been glad to follow the example of internationalism set by the Royal Society of London from its earliest years, when its active "correspondence" with foreign scientists helped to make its *Philosophical Transactions* world famous. In the Western World only the Nazis have repudiated the international republic of learning since it first began to flower in the European intellect. As a consequence German science has suffered. In 1936 the Nazis rededicated "to the German spirit" the new university building at Heidelberg, built chiefly with American funds and originally dedicated "to the Eternal Spirit." It is that spirit which the scientists of the free countries, and not least those of America and Britain, are fighting to recapture, the *Times* points out.

Nonspecific Epididymitis

Nonspecific epididymitis (neither gonococcic nor tuberculous) has attracted attention recently. It is relatively common among soldiers but is often unrecognized as such and so may lead to unnecessary orchiectomy. For the instruction of medical officers the *Army Medical Department Bulletin* deals with the subject. It points out that soldiers resent being wrongly accused of having contracted gonorrhea, but even greater harm is done when a diagnosis of tuberculous epididymitis is made on insufficient evidence and a testicle is unnecessarily removed. In the *British Journal of Surgery* (**26**:800 [April] 1939) McGavin recorded that of 21 testicles removed for tuberculous epididymitis 7 were found nontuberculous on microscopic examination. In a recent discussion at the Royal Society of Medicine, speakers referred to the high incidence of nonspecific epididymitis in the fighting forces. Army records show that, between October 1942 and March 1943, of 680 cases of epididymitis 79 were diagnosed as gonococcic and 19 as tuberculous; in 582 the cause was not specified.

It is difficult to determine how far the common pyogenic bacteria—staphylococci, streptococci and coliform bacilli—are responsible for nonspecific epididymitis. Of the 582 army cases of epididymitis mentioned in which the cause was unspecified there was evidence of genitourinary infection in 108 (pus cells in the urine in 52, coliform bacilli in 32, staphylococci in 17 and mixed infection in 7). Other causes suggested are chill, trauma, reflux of normal urine along the vas (especially during exertion with a full bladder), congestion due to erotic impulses and thrombosis of the papiniform plexus.

In view of the variety of causes it is not surprising that there are many different clinical pictures. In some, symptoms come on acutely, as in gonococcic epididymitis; in others the onset is insidious and tuberculosis is likely to be diagnosed. Acute infections usually resolve in two to three weeks, but sometimes recovery may be slow, requiring a period of one to six months. Recurrences are not uncommon, and the infection may be bilateral. There may be moderate pyrexia, pain and frequency of micturition with a little bright red blood at the beginning of micturition. The treatment is rest, support of the scrotum and local applications.

As to diagnosis, it should be remembered that a urethral discharge often disappears with the onset of gonococcic epididymitis. Therefore the diagnosis may be in doubt if gonococci have not been previously demonstrated and can no longer be found in urethral smears or in the urine. In such gonococcic cases the complement fixation test is likely to be strongly positive. Before diagnosing tuberculous epididymitis the physician must seek signs of tuberculosis elsewhere, especially in the renal tract. Several specimens of urine, including one twenty-four hour specimen, must be searched for tubercle bacilli, cultured and injected into guinea pigs. Nonspecific lesions of the epididymis will regress, while tuberculous ones are likely to advance.

Scotland's High Infant Mortality

An official report shows that Scotland had the highest infant mortality rate for the prewar period 1934-1938 of seventeen countries, including the British dominions, the United States and all countries in western Europe except Spain and Portugal. The report of a committee of which dietitian Sir John Boyd Orr is chairman states that the mortality can be reduced by better housing and less overcrowding, enough of the right food, an extended child welfare service and better training of family doctors in child health and nutrition. The proportion of people living in poverty is twice as high as in England and Wales. The importance of human milk is emphasized and it is pointed out that there is no organized breast milk service in Scotland.

Hospitals to Lose More Doctors for War Service

Because of the war, hospitals have already lost many members of their medical staffs. They are now to lose more to meet the urgent demands of the services. Fifty per cent of newly qualified doctors holding house appointments at hospitals in class A or B are to be called up. This decision has been reached on the recommendation of the Medical Personnel Committee, which holds that it is the only way of meeting the need of the fighting forces for immediate acceleration in the recruitment of doctors. This will increase the difficulties of the hospitals, which already are struggling on with less than half their peacetime staff.

Marriages

HERMAN STANLEY PARISH JR., Manning, S. C., to Miss Virginia Ballentine of Anderson in Orangeburg, January 17.

JAMES EDWARD MCGEE JR., Roanoke Rapids, N. C., to Miss Jane Katherine Liesfeld of Richmond, Va., December 20.

JOHN J. MITSCHKE JR. to Miss Charlotte Louise McGowan, both of Helena, Mont., in December.

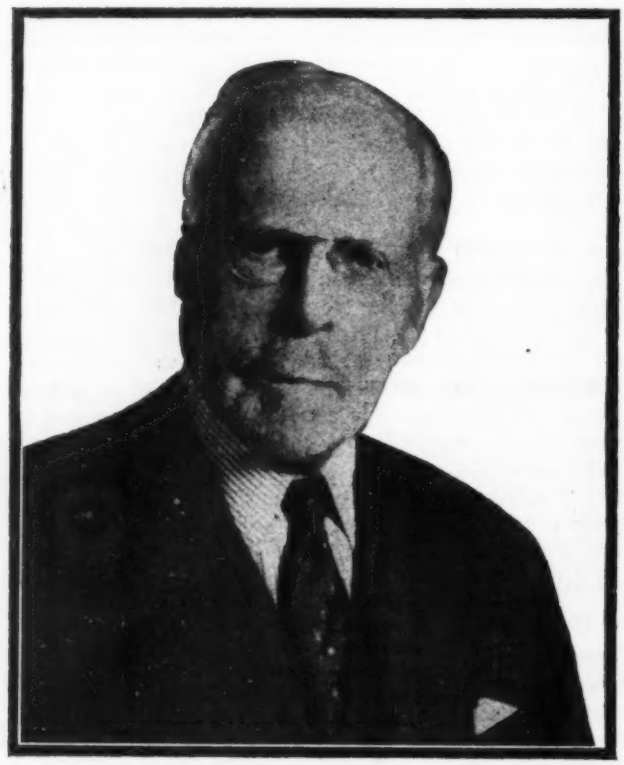
ROBERT SEYMOUR PIPER, Cincinnati, to Miss Jaudon Harley of Columbia, S. C., January 12.

ROBERT W. MCINTIRE, Olathe, Kan., to Miss Sara C. Gaither in Kansas City, Mo., recently.

Deaths

Bernard Sachs ✠ renowned neurologist, died at his home in the Hotel Plaza, New York, February 8, aged 86.

Dr. Sachs was born in Baltimore Jan. 2, 1858. He received his A.B. at Harvard University in 1878 and his degree in medicine at the Kaiser-Wilhelms-Universität Medizinische Fakultät, Strassburg, Germany, in 1882. He was a postgraduate student with Meynert at Vienna, with Hughlings Jackson at London and with Charcot at Paris from 1882 to 1884, when he returned to New York. In 1885 he became instructor in the New York Polyclinic Hospital and in 1888 professor. Identified as the dean of American neurologists, his career was replete with honors and associations signifying his importance in his chosen specialty, among which were his positions on the staffs of Montefiore, Bellevue and Mount Sinai hospitals, New York. In 1900 he was instrumental in establishing at Mount Sinai the first neurologic division in any voluntary New York hospital, a division he directed until 1924. He was twice president of the New York Neurological Society and of the American Neurological Association. He was president of the New York Academy of Medicine, professor of clinical neurology at the Columbia University College of Physicians and Surgeons, director of the division of child neurology at the Neurological Institute and chairman, 1916-1917, Section on Nervous and Mental Diseases, American Medical Association. He was also director of child neurology research of the Friedsam Foundation.



Bernard Sachs, M.D., 1858-1944

In 1931, Dr. Sachs served as the first president of the first International Neurological Congress, a project of which he was a founder and which had been scheduled to be held in Paris in 1914 only to be dissolved by World War I.

In 1942 Mount Sinai Hospital, in tribute to his many years of service in medicine and for his long association with the hospital, held a special ceremony to commemorate his "sixty years' participation in the progress of medicine." A volume of original papers on scientific research specially contributed by noted physicians and scientists was presented to Dr. Sachs as a feature of the occasion. His noted contributions to the field of neurology stemmed from his description in 1887 of the clinical entity of amaurotic family idiocy known as Sach's disease. This condition was named Tay-Sachs disease after Dr. Sachs and Dr. Warren Tay, an English physician who had described the eye condition at about the same time.

Dr. Sachs had contributed generously to the literature. He was an author of numerous monographs and in 1895 of "Mental and Nervous Disease in Children," in 1926, with Dr. L. Hausman, "Nervous and Mental Disorders from Birth Through Adolescence" and in 1936 "Keeping Your Child Normal."

Lee Wallace Dean ✠ St. Louis, noted otolaryngologist and pioneer in the recognition and treatment of sinus diseases and professor emeritus of otolaryngology, Washington University School of Medicine, St. Louis, died February 9, aged 70, of coronary occlusion.

Dr. Dean was born in Muscatine, Iowa, March 28, 1873. He studied at the State University of Iowa, receiving his degree of doctor of medicine there in 1896. After a year in Vienna he returned to the practice of medicine in Iowa. From 1900 to 1927 Dr. Dean served as professor and head of the department of otolaryngology and oral surgeon at the State University of Iowa, carrying a concurrent appointment from 1912 to 1927 as dean of the medical school. He then went to Washington University School of Medicine, St. Louis, as professor of otolaryngology and subsequently became director in research in otolaryngology at the Oscar Johnson Research Institute. He was once a member of the staffs of the McMillan Eye, Ear and Throat Hospital, Barnes Hospital, St. Louis Children's Hospital, St. Louis Maternity Hospital, Jewish Hospital and the otolaryngologist-in-chief to outpatients, University Clinics; serving also as otolaryngologist-in-chief at the McMillan Eye, Ear and Throat Hospital.

Lee Wallace Dean, M.D., 1873-1944

Dr. Dean was a member of numerous scientific groups, including the Association of American Peroral Endoscopists, Missouri State Medical Association, American Broncho-Esophagological Association, and La Société de laryngologie des hôpitaux de Paris. He was a member of the board of directors of the American Board of Otolaryngology. He served as president of the Iowa State Medical Society, American Laryngological Association, American Laryngological, Rhinological and Otological Society, American Otological Society, American Academy of Ophthalmology and Otolaryngology and secretary of the Section on Laryngology, Otology and Rhinology of the American Medical Association, 1916-1918, and chairman in 1918.

He was a commanding officer at General Hospital number 54 during World War I and was a lieutenant colonel in the medical officers reserve corps, retired. In 1937 Dr. Dean was presented with the de Roaldes Gold Medal of the American Laryngological Association. In 1927 he became editor-in-chief of the *Annals of Otology, Rhinology and Laryngology,* a position he held until death.

James Tayloe Gwathmey ✠ Legion, Texas, a leader in anesthesiology, died in the Veteran Administration Facility, Fayetteville, Ark., February 11, aged 80, of coronary heart disease and bronchial asthma.

Dr. Gwathmey was born in Norfolk, Va., Sept. 10, 1863. His earlier inclinations were toward the ministry, but at Vanderbilt University, Nashville, where he received his degree of doctor of medicine in 1899, his interest turned to medicine. In 1902 Dr. Gwathmey entered the practice of medicine in New York, and he was subsequently a member of the staffs of Trinity and Willard Parker hospitals and consulting anesthetist to the Metropolitan, Knickerbocker and City postgraduate hospitals. At one time he served as a member of the Cancer Institute. He devoted his life to researches which contributed largely to present day usages in operative surgery. At the International Medical Congress in London in 1913 he presented a paper on "An Attempt to Abolish Inhalation Anesthesia." With Dr. Howard T. Karsner, Dr. Gwathmey introduced the method of administering ether and oil orally in preparation for painful dressings for war wounded. In 1923, with Asa B. Davis, he instituted "obstetrical analgesia" at the New York Lying-In Hospital. With Charles W. Hooper he discovered that preliminary medication is equally important with the terminal anesthetic in safeguarding life and preventing lesions of the lung. Dr. Gwathmey was author of one of the most comprehensive and authoritative works in his field, "Anesthesia," published in 1914. In 1922 the American Association of Anesthetists presented him with a silver loving cup inscribed: "Founder and first president of the American Association of Anesthetists for advances in the research, practice and literature of anesthesia, 1912-1922."

William Wilson Pearson ✠ Des Moines; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1893; specialist certified by the American Board of Otolaryngology; member of American Academy of Ophthalmology and Otolaryngology and formerly vice president; member of the American Laryngological, Rhinological and Otological Society and the Association for Research in Ophthalmology, Inc.; fellow and formerly vice president of the American College of Surgeons; in 1914 organized the Des Moines Academy of Medicine; first president of the Des Moines Medical Library Club in 1912; past president of the Des Moines Academy of Medicine; formerly councilor of the Fifth District of the Iowa State Medical Society; served as a major in the medical corps of the U. S. Army during World War I; lecturer on ophthalmology and clinical ophthalmology at the Drake University College of Medicine from 1902 to 1907 and later professor of ophthalmology and clinical ophthalmology and dean; first All-American football star west of the Alleghenies in 1891; died February 11, aged 74, of cardiovascular disease and myocardial failure.

Daniel Murrah Molloy, White Plains, N. Y.; University of Nashville (Tenn.) Medical Department, 1908; member of the Medical Association of the State of Alabama; a field representative in Central America for the international health division of the Rockefeller Foundation from 1914 to 1940; a medical inspector for the bureau of health of the Philippine Islands for five years; later served with the U. S. Public Health Service as a special expert on malaria and conducted investigations in various parts of the United States; in May 1935 the president of Nicaragua presented him with a letter of gratitude acknowledging his many years of service in connection with public health service of Nicaragua; became president of the Rotary Clubs of Central America in 1936; received degree of doctor of public health from Johns Hopkins University, Baltimore, in 1923; died in the New York Hospital, Westchester Division, January 29, aged 61, of multiple brain infarcts.

Charles H. McCollum, Fort Worth, Texas; Barnes Medican College, St. Louis, 1901; member of the State Medical Association of Texas; fellow of the American College of Surgeons; veteran of the Spanish-American War; formerly professor of therapeutics and pharmacology, Fort Worth School of Medicine, Medical Department of Texas Christian University; served as city and county health officer; chief of staff of St. Joseph's Infirmary in 1925 and senior surgeon for many years; visiting surgeon at All Saints Episcopal Hospital and the Harris Memorial Methodist Hospital; consulting gynecologist at the City and County Hospital; for many years served on the board of trustees of the Trinity University, Waxahachie; died in a Fort Worth hospital December 2, aged 69, of acute cardiac failure.

Edward Peirson Richardson ✠ Brookline, Mass.; Harvard Medical School, Boston, 1906; John Homans professor of surgery emeritus at his alma mater and the graduate school; member of the American Surgical Association, Southern Surgical Association, Society of Clinical Surgery and the New England Surgical Society; fellow of the American College of Surgeons; served with the British Expeditionary Forces in 1915 and later as captain and major in the medical corps of the U. S. Army in France and Germany; author with Dr. J. H. Means of "Diagnosis and Treatment of Diseases of the Thyroid," published in 1939; honorary member of staff, Massachusetts General Hospital; died in the Phillips House of the hospital January 26, aged 62, of coronary thrombosis.

Sadie Bay Adair, Chicago; John A. Creighton Medical College, Omaha, 1902; member of the Illinois State Medical Society and the American Medical Women's Association; at one time a member of the Chicago Board of Education; formerly on the medical staff of the City of Chicago Municipal Tuberculosis Sanitarium and director of the Frances Juvenile Home; editor for twenty-five years of the *Official Bulletin of the American Medical Women's Association, Inc., Branch number 2;* died January 16, aged 70, of uremia.

Hjalmar Ahlstrom, Worcester, Mass.; Tufts College Medical School, Boston, 1911; died January 12, aged 80.

William R. Arthur, Kinloch, Mo.; Howard University College of Medicine, Washington, 1890; served as a first lieutenant in the medical reserve corps of the U. S. Army during World War I; served as postmaster of Kinloch and Brooklyn, Ill.; formerly on the staff of the Missouri State Penitentiary Hospital, Jefferson City, and chief of staff of St. Mary's Infirmary, St. Louis, where he died December 17, aged 75, of hypertensive cardiovascular disease.

Fernando Basanez, Corpus Christi, Texas; Universidad Nacional Facultad de Medicina, Mexico, D. F., 1919; at one time associated with the Bexar County Health Department; served as secretary of the Texas Radiological Society in 1941 and 1942; died November 8, aged 48, of pulmonary tuberculosis.

John Carlind Browne, New York; McGill University Faculty of Medicine, Montreal, Que., Canada, 1918; served as a major in the Canadian Army during World War I; instructor in medicine from 1922 to 1926 and associate in medicine from 1926 to 1938 at the New York Post-Graduate Medical School; on the staffs of the Manhattan General and St. Vincent's hospitals; died January 6, aged 50.

Leigh Buckner ✠ Roanoke, Va.; University of Maryland School of Medicine, Baltimore, 1885; on the staff of the Roanoke Hospital; died December 25, aged 82.

James Huston Carrico, Portland, Ore.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; member of the Oregon State Medical Society; died in the Portland Sanitarium and Hospital December 22, aged 73, of carcinoma of the stomach.

Jonas Clark, Gilroy, Calif.; Harvard Medical School, Boston, 1875; fellow of the American College of Surgeons; member of the California Medical Association; formerly health officer; at one time superintendent of the Santa Clara County Hospital, San Jose; on the staff of the Wheeler Hospital, where he died December 30, aged 90, of pneumonia following a fall and an old cardiac valvular lesion.

Olive L. Clarke, Los Angeles; Woman's Medical College of Pennsylvania, Philadelphia, 1895; died recently, aged 72.

John W. Conklin, Leitchfield, Ky.; Hospital College of Medicine, Louisville, 1882; member of the Grayson County Board of Health; died November 10, aged 85, of senility.

James Homer Cook, New Carlisle, Ohio; Pulte Medical College, Cincinnati, 1883; died in the Springfield City Hospital, Springfield, December 31, aged 87, of carcinoma of the prostate.

Joseph Calhoun Darracott ✠ Marfa, Texas; University of Texas School of Medicine, Galveston, 1905; first president of the Pecos-Jeff Davis-Presidio-Brewster Counties Medical Society; served as city and county health officer; a lieutenant in the medical corps of the U. S. Navy during World War I; recently an examiner of selectees and chairman of the procurement and assignment advisory committee for Pecos, Jeff Davis, Presidio and Brewster counties; died November 27, aged 63, of coronary occlusion.

Lucien Emil Demke, Belcourt, N. D.; Loyola University School of Medicine, Chicago, 1926; served during World War I; appointed a deputy state health officer to act on the reservation where he was an Indian Service physician; died in Leland, Ill., recently, aged 46, of coronary thrombosis and malignant hypertension.

William Burns Donaldson, Polo, Ill.; Chicago Medical College, 1882; died in Elgin December 19, aged 90, of senility.

James Michael Donelan ✠ Glenwood, Iowa; College of Physicians and Surgeons of St. Joseph, Mo., 1882; served on the board of health, library board, as sheriff and county coroner; died December 23, aged 83, of coronary occlusion.

Joseph Alexander Edgar ✠ Jersey City, N. J.; Columbia University College of Physicians and Surgeons, New York, 1906; died in the Christ Hospital December 30, aged 63, of epithelioma of the hand from x-ray burns and of hemorrhage from the axilla.

Elmer A. Drolshagen ✠ Algonac, Mich.; Detroit College of Medicine and Surgery, 1917; formerly medical examiner of Wayne County; served during World War I; on the staff of St. Mary's Hospital, Detroit; died in the Harper Hospital, Detroit, January 14, aged 50, of pernicious anemia and spastic colitis.

Henry William Edwards, Rochester, N. Y.; Harvard Medical School, Boston, 1915; served during World War I; died January 9, aged 55, of poison, self administered.

William G. Evans, Ellwood City, Pa.; Starling Medical College, Columbus, 1898; on the staff of Ellwood City Hospital; died recently, aged 74, of cerebral hemorrhage.

Edgar Lee Gardner, St. Joseph, Mo.; Central Medical College of St. Joseph, 1903; served during World War I; died December 13, aged 61, of pulmonary tuberculosis.

William B. Gnagi Sr. ✠ Monroe, Wis.; Rush Medical College, Chicago, 1893; on the staff of St. Clare Hospital; died November 6, aged 73, of carcinoma of the liver.

George W. Hayman, Little Rock, Ark.; Meharry Medical College, Nashville, Tenn., 1893; died December 28, aged 78, of arteriosclerosis.

Mark Brownson Hilts, Sloan, Iowa; Rush Medical College, Chicago, 1886; served as mayor of Sloan and member of the school board; died in Sioux City December 23, aged 84, of coronary occlusion.

James R. Grave McLauchlin, Oklahoma City; University of Oklahoma School of Medicine, Oklahoma City, 1911; member of the Oklahoma State Medical Association; served as county physician; on the staffs of the Oklahoma City General Hospital, Wesley Hospital and St. Anthony Hospital, where he died December 26, aged 59, of coronary occlusion.

Nikolas Frederic Mirabile, Garfield, N. J.; Medical College of the State of South Carolina, Charleston, 1920; died in the Passaic General Hospital, Passaic, December 26, aged 58, of influenzal pneumonia and acute myocarditis.

LIEUT. JOHN D. GREATHOUSE (MC), U.S.N.R., 1914-1943

Charles Lloyd Moore, Charlottesville, Va.; University College of Medicine, Richmond, 1897; a captain in the medical corps of the U. S. Army during World War I; died December 8, aged 68, of arteriosclerosis.

Ferris Albert Niles, Crab Orchard, Tenn.; Chattanooga Medical College, 1896; served during World War I; died in the Chamberlain Memorial Hospital, Rockwell, December 15, aged 69, of strangulated inguinal hernia and pneumonia.

William H. Oatway Sr., Waukesha, Wis.; Milwaukee Medical College, 1897; member of the State Medical Society of Wisconsin; past president of the Waukesha County Medical Society; served on the state draft board of appeal during World War I; died January 2, aged 73, of carcinoma of the liver.

Harry Clayton Povey, Newark, N. J.; Baltimore Medical College, 1905; died December 10, aged 59, of carcinoma of the lung and chronic myocarditis.

Charles Cooper Rankin, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1895; member of the Medical Society of the State of Pennsylvania; died in the Chester County Hospital, West Chester, recently, aged 71, following an operation for peptic ulcer.

Horace Eddy Robinson ✠ Pleasantville, N. Y.; Tufts College Medical School, Boston, 1912; a lieutenant in the medical corps of the U. S. Army during World War I; chief of the division of contagious diseases, past chairman of the medical board and past president of the attending medical staff, Grasslands Hospital, Valhalla; for many years on the staff of the Babies Hospital, New York, and the Northern Westchester Hospital, Mount Kisco; died January 11, aged 56, of cerebral hemorrhage.

Robert Nathan Rogers, Oxford, N. Y.; University of Louisville (Ky.) Medical Department, 1907; at one time a druggist; died in Sidney January 1, aged 58, of coronary occlusion.

Michel M. Saliba ✠ Wilson, N. C.; Baltimore Medical College, 1897; a founder, first president and formerly councilor of the Fourth District Medical Society; served during World War I; major, medical reserve corps, U. S. Army, not on active duty; a charter member, past president and secretary of the Rotary Club; a member of the chamber of commerce; died in Savannah, Ga., January 5, aged 68, of heart disease and uremia.

George Addison Silver ✠ Hightstown, N. J.; University of the City of New York Medical Department, New York, 1881; died January 7, aged 82, of cerebral hemorrhage.

John Pugh Smallwood ✠ Falls Church, Va.; University of Maryland School of Medicine, Baltimore, 1885; on the courtesy staff, Arlington Hospital, Arlington; died January 4, aged 78, of chronic myocarditis.

Philip Smith, New York; Columbia University College of Physicians and Surgeons, New York, 1900; formerly assistant clinical professor of neurology at the Long Island College Hospital; member of the American Psychiatric Association; chief medical inspector for the department of mental hygiene of the state of New York; served overseas as a major in the medical corps of the U. S. Army during World War I; died in the Brooklyn State Hospital January 9, aged 71, of pneumonia and heart disease.

Albert Stern, Woodside, N. Y.; Medizinische Fakultät der Universität Wien, Germany, 1927; member of the Medical Society of the State of New York; on the staff of Queens General Hospital, Jamaica; died in the Boulevard Hospital, Long Island City, January 6, aged 41, of acute leukemia.

John Wright Straight, Santa Ana, Calif.; Omaha Medical College, 1891; died in St. Joseph Hospital, Orange, December 25, aged 75, of coronary thrombosis.

Albert Ernst Taussig, St. Louis; Washington University School of Medicine, St. Louis, 1894; professor emeritus of clinical medicine at his alma mater; member of the Association of American Physicians; specialist certified by the American Board of Internal Medicine; served on the staffs of the Barnes, Jewish and St. Mary's hospitals; died January 16, aged 72, of carcinoma of the colon with metastasis to liver and lungs.

Wright B. Taylor, Weldon, Texas (licensed in Texas under the Act of 1907); on the staff of the Eastham State Farm; died recently, aged 65.

CORRECTION

Died While in Military Service.—The death of Lieut. Rowland William Hall Jr., Clinton, Mass., was erroneously reported in THE JOURNAL, February 12, page 457. A telegram from the Surgeon General's Office, Washington, D. C., reads "Due to similarity in name Lieut. Rowland William Hall Jr., medical corps, inadvertently reported dead."

KILLED IN ACTION

John Dallas Greathouse, Minneapolis; University of Minnesota Medical School, Minneapolis, 1940; commissioned lieutenant (jg) medical corps, U. S. Naval Reserve, on March 10, 1941 and a lieutenant on June 15, 1942; posthumously awarded Order of Purple Heart; aged 29; officially reported as missing in action as of May 7, 1942, serving aboard the U. S. S. *Neosho* when the vessel was lost as the result of an enemy bombing attack in the Southwest Pacific; officially declared dead May 8, 1943 by the U. S. Navy Department.

Bureau of Investigation

TWO FRAUDULENT "BUST DEVELOPERS"

Mrs. Richman's Estrol Cream

A Matilda Richman, trading under the names Mrs. M. Richman and Estrol Company, sold "Estrol Cream" through the mails from Brooklyn. The Post Office Department's investigation revealed that she exploited her nostrum under the claim that it would overcome and remove the cause of flat, undeveloped breasts by restoring to normal functioning the endocrine glands which produce the hormones essential to proper breast development. To give her product the semblance of a scientific discovery, she claimed: "Members of the medical profession have now found a cream containing certain estrogenic substances which is doing wonders where estrogenic substances are needed . . . Some women require but one jar, while others require several. Don't be disappointed at the first trial. Very often the second or third will do the trick. In certain rare cases, more are required . . . It is a harmless, scientifically prepared cream." There were, of course, the usual testimonial letters, but with the added explanation: "Because of the extremely personal nature of this product, we cannot, of course, give you the full names of these people."

When Mrs. Richman was ordered to show cause why a fraud order should not be issued against her business, a government chemist appearing as a witness for the Post Office Department at the hearing testified that his chemical analysis of a jar of Estrol Cream purchased through the mails from Mrs. Richman showed that it contained petrolatum, hydrous wool fat, peanut oil, water and stilbestrol. The label declared the presence of 5 mg. of stilbestrol in the 2 ounce jar.

Another government witness, a medical officer in the United States Navy and an expert in endocrinology, particularly in relation to diseases of the breast, testified as to the structure and functions of this organ. Among other things, he showed that small breasts are common to certain women and that their size may be the result of diseases and abnormal physical conditions, particularly those affecting the endocrine glands; that only about 5 per cent of the women with small breasts are in that condition as a result of a deficiency of estrogenic substances, and that the small size may even be caused by too much estrogen in the person. Hence, he said, there is no single type of treatment which could be uniformly used, or any particular drug, or daily dosage thereof, which could be uniformly prescribed as a corrective measure for all cases of small breasts.

The witness further testified that the product in question contained no ingredient besides stilbestrol which would have any effect on the breast, and that though the amount of it present in Estrol Cream might slightly increase the size of the nipple and the thickness of the skin around it, as well as the connective tissue immediately around the ducts, and cause a dilatation of said ducts, effecting a swelling thereof, this condition would be only temporary and the breasts would regress even under continued treatment. Further, he declared that the daily dosage of Estrol Cream as prescribed in the directions included only ⅙ mg. of stilbestrol, which, he said, was far less than the ordinary dosage and so was hardly likely to have any effect. The respondent claimed that this expert medical witness had admitted that a 3 inch development of the breasts was possible through the use of less than one full jar of Estrol Cream, but the physician replied that such result was entirely improbable and bordered on the impossible.

Although the respondent was given every opportunity to introduce expert medical testimony in her behalf, and there was even an adjournment of the hearing to make this possible for her, such testimony was not finally introduced. The respondent did, however, attempt to present medical journals and books and other evidence, all of which were clearly inadmissible under the law of evidence.

The respondent challenged the jurisdiction of the Post Office Department over the subject matter of this case, but this was overruled, since the statutory jurisdiction of the Department over such cases has been upheld by the highest courts of the land on many occasions.

Finally, it was found that the respondent was engaged in conducting a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises, and a fraud order was issued Aug. 31, 1943 against the names Estrol Company, Matilda Richman and Mrs. M. Richman. In this connection it is of interest that on May 22, 1942 the Post Office Department had issued a fraud order against another mail-order scheme of Matilda Richman, which she operated under the names Hairtone Company and Marvel Company in selling "Quinine Hair Marvel" through the mails as an alleged hair grower and dandruff cure.

Another from Brooklyn—Form-Aid Cream

"Form-Aid Cream" was sold through the mails from Brooklyn under the trade style "Form-Aid." When the Post Office Department, after due investigation of the scheme, addressed to this firm name a memorandum of the charges of fraud, accompanied by a letter, the receipt for this material was signed "Ethel Kahan, Owner." The hearing of the case was held Sept. 16, 1943, after a postponement had been granted the respondent, who was represented by a Brooklyn attorney. The latter was given an additional period to submit a brief, and this proposed that the case be disposed of by means of the respondent's affidavit agreeing to discontinue the business. This, however, the Post Office Department would not accept.

NEW BUST CREAM FOR WOMEN
HERE'S GOOD NEWS FOR MANY WOMEN WITH FLAT, UNDEVELOPED BUSTS!
Many women who are embarrassed and worried about flat, undeveloped busts because they make them look mannish and lack sex appeal will be happy to know about this new discovery. Members of the Medical profession have now found that a cream containing certain estrogenic substances which are doing wonders in cases where estrogenic substances are needed. If you are embarrassed by a flat, undeveloped bust send your name and address to Mrs. M. Richman, 336 Adams St., Dept SF10 B'klyn, N. Y. you will receive full information in a plain envelope. No charge is made for the information on the new Estrol cream.
DOES YOUR BUST LACK NORMAL GROWTH AND SIZE
DUE TO LACK OF SUFFICIENT ESTROGENIC SUBSTANCES?
Try ESTROL CREAM
Satisfaction-Guaranteed or Money-Back
ONLY $2 Complete directions with every package. Shipped in plain wrapper. Send $2 (we pay postage) or order C.O.D. plus postage (pay postman on arrival)
ESTROL COMPANY
336 Adams St., Dept SF-11
Brooklyn, N. Y.

Adjoining advertisements of Estrol Cream in a farm journal. Note that one gives the promoter as Mrs. M. Richman and the other as the Estrol Company, and that even the key numbers are not identical.

That department's investigation revealed that Form-Aid Cream, when used in conjunction with certain exercises, was represented to bring any undeveloped or sagging bust to a full and shapely size, any scrawny neck to a beautiful and attractive condition, and unshapely limbs to a comely state, regardless of the user's age or physical condition. Apparently the cream was not always uniform in composition, for a government chemist testified at the hearing that his analysis showed the contents of one jar to consist of 86 per cent of petrolatum, 14 per cent of hydrous wool fat, and a faint perfume, whereas examination of a specimen showed it to contain nothing but petrolatum.

Also testifying for the Post Office Department was a physician in government employ who discussed the structure and functions of the female breast and its occasional abnormalities, particularly as to size. He expressed the opinion that Form-Aid Cream would be absolutely worthless for developing any breast, filling out a scrawny neck or making unshapely limbs attractive, even in connection with the massage recommended by the promoter, since such massage did not cause absorption of the petrolatum, and any hydrous wool fat that might be absorbed would not be localized in the breasts, but distributed throughout the body by means of the blood stream, and would be handled by the system like fat that is absorbed from the intes-

tines. He further showed that the exercises recommended to accompany the use of the cream would not improve scrawny necks or unshapely limbs.

Accordingly, the enterprise was found to be a scheme for obtaining money through the mails by means of false and fraudulent representations and promises, and a fraud order debarring it from the mails was issued Nov. 13, 1943, against Form-Aid and its officers and agents.

MISBRANDED PRODUCTS

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the Federal Security Agency

[EDITORIAL NOTE.—These Notices of Judgment are issued under the Food, Drug and Cosmetic Act and in cases in which they refer to drugs and devices they are designated D. D. N. J. and foods, F. N. J. The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consignee; (3) the date of shipment; (4) the composition; (5) the type of nostrum; (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

Bevimin, or Bevimin Vitamin B_1 Hydrochloride.—Loeser Laboratory, Inc., New York. Shipped June 29, 1939. Adulterated because strength differed from and quality fell below the representation on label "Each cc. = 10 MG. = 3000 I.U." (of vitamin B_1) and (on carton) "Each cc. contains 10 Mg. (3,000 I.U.)" (of vitamin B_1), whereas it contained a smaller amount. Misbranded because the aforesaid statements on label and carton were false and misleading.—*[D. D. N. J., F. D. C. 680; February 1943.]*

Bronchi-Lyptus.—Bronchi-Lyptus Laboratory, Los Angeles. Shipped Sept. 3, 1940. Composition: essentially oil of eucalyptus, with a gum, glycerin, sugar and water. Misbranded because name of product and certain label statements variously suggested that the mixture was an efficacious treatment for all throat and bronchial disorders, would correct fermentation in the stomach, and was accepted by all nose and throat specialists. Further misbranded because label did not accurately state quantity of contents.—*[D. D. N. J., F. D. C. 727; April 1943.]*

Cal-Par (Dr. Parrish's 7 Day Reducing Plan).—Hood Products Corporation, New York. Shipped May 10 and 14, 1941. Composition: Microscopic examination showed wheat germ, wheat bran, crystalline material and wheat flour. Chemical examination showed calcium, phosphorus, iron salts and sugar. Adulterated because strength differed from and quality fell below that which it was represented to possess, namely, 1.8 Gm. of phosphorus per 2 heaping teaspoonsful. Misbranded because of following false and misleading label representations: That it would supply the average person's daily need of phosphorus, build strong teeth, sturdy bones, firm flesh, pliant muscles and efficient brain cells; that it was an aid for underweight and for reducing overweight, would protect the user against nervousness, tiredness, sleeplessness and lack of "pep" and vigor; that it would prevent heart trouble, nervous disorders, kidney complaints, liver ailments, digestive upsets, eye afflictions and many other disorders due to lack of certain vitamins and minerals; that it would aid in maintaining the acid-base equilibrium of the blood and furnish nourishment to nerves and brain, constituted an adequate treatment in anemia, run-down conditions and sinus trouble, and would relieve the pains of arthritis and rheumatism. —*[D. D. N. J., F. D. C. 677; February 1943.]* Adulterated and misbranded also under the provisions of the law applicable to foods as reported in *F. N. J. 3648.*

Castoria.—George Crompton and Charles Crompton and Sons, Inc., Lynn, Mass. Shipped Dec. 4 and 5, 1940. (This is not the widely advertised "Fletcher's Castoria.") Composition: sugar, alcohol, water, methyl salicylate, oil of anise, Rochelle salt and plant extractives, including senna. Misbranded because falsely represented on label to be a remedy for regulating stomach and bowels, especially useful in convulsions, colic, feverishness, diarrhea, sour stomach, worms, and loss of sleep, and to aid digestion and promote rest.—*[D. D. N. J., F. D. C. 682; February 1943.]*

Chek-A-Cold.—Hance Bros. & White, Inc., Philadelphia. Shipped March 13, 1942. Composition: essentially extracts of plant drugs, including an alkaloid-bearing substance, with a small amount of tartar emetic, chloroform (0.97 minim per fluid ounce), alcohol, sugar and water. Misbranded because of false and misleading suggestions in the designation "Chek-A-Cold" and incorrect label declaration of chloroform content.—*[D. D. N. J., F. D. C. 734; April 1943.]*

Colloidal Dextro Calcium Bleything.—Bleything Laboratories, Los Angeles. Shipped between Oct. 17, 1940, and July 2, 1941. Misbranded because label recommendations were false and misleading in giving the impression that the product would supply the user with sufficient calcium to be of value in cases of ordinary or even pronounced calcium deficiency. Also misbranded because label declaration of sodium benzoate content was incorrect.—*[D. D. N. J., F. D. C. 717; April 1943.]*

Coreco Vitamins A-B_1-G-D Capsules.—International Vitamin Corporation, New York. Shipped May 25, 1940. Composition: each capsule was represented to contain 50 international units of vitamin B_1 and 1,000 U. S. P. units of vitamin D, whereas examination showed that each capsule contained less than 12.5 international units of vitamin B_1 and not more than 850 U. S. P. units of vitamin D; hence adulterated. Misbranded because falsely represented to furnish "moderate amounts" of vitamins B_1 and G when taken in the dosage of one capsule per day as directed. *[D. D. N. J., F. D. C. 681.]* Also adulterated and misbranded under the provisions of the law applicable to foods, as reported in *F. N. J. 3425.*

Crompton's Liniment.—George Crompton and Charles Crompton and Sons, Inc., Lynn, Mass. Shipped Dec. 4 and 5, 1940. Composition: a fatty oil, with such volatile oils as camphor, methyl salicylate and probably eucalyptol. Misbranded because of false and misleading label representations that it would be efficacious in treatment of rheumatic pains, numbness of limbs, contraction of muscles, pains in the side, chest and back, hoarseness, sore throat, quinsy, and common and severe cases of headache. Further misbranded because fabricated from two or more ingredients and label did not give the common or usual name of each.—*[D. D. N. J., F. D. C., 682; February 1943.]*

Dr. Gordshell's Salve.—Gordshell Chemical Company, Baltimore. Shipped Sept. 23, Oct. 17 and Nov. 28, 1941. Composition: fatty, waxy and resinous materials containing volatile oils and a trace of alkaloid. Misbranded because of false and misleading statement on label and carton, "Contains: Stramonium Alk. .05%", since product contained not more than 0.002 per cent, if any, of stramonium alkaloids. Further misbranded because of false and misleading label representations that product was efficacious for skin irritations and boils, and that its ingredients possessed unusual properties for promoting healing. Also misbranded because label failed to give common or usual name of each active ingredient, since declaration "Contains: Stramonium Alk. .05%, Oil of Sassafras, Elder Flowers, Bayberry, Rosin, Beeswax, in a Suitable Base" was not a true statement of the active ingredients.—*[D. D. N. J., F. D. C. 686; February 1943.]*

Individual Quinine Hair Treatment.—Joseph Daigneault, Malone, N. Y. Shipped June 3, 1940. Composition: Tube No. 1, essentially mineral oil, a small amount of a fatty oil, and carbolic acid; Tube No. 2, essentially soap and water. Bacteriologic tests showed that the treatment was not antiseptic. Adulterated because strength differed from, and purity or quality fell below, that which it was represented to possess, namely, "antiseptic"; also misbranded for that reason and because product was represented to be efficacious for the purposes recommended and because label did not carry an accurate statement of the quantity of contents, common or usual names of active ingredients or correct name and address of the manufacturer, packer or distributor.—*[D. D. N. J., F. D. C. 679; February 1943.]*

Life Line Tonic.—John B. Kori, trading as United States Remedy Company, Jacksonville, Fla. Shipped Oct. 17, 1940. Composition: a water-glycerin solution containing large amounts of epsom salt and smaller ones of sodium sulfate, sodium phosphate, quinine, iron, caffeine, saccharin and plant extractives, including emodin. Misbranded because of false and misleading label representations that product would be efficacious in treating sour stomach, biliousness, colic, cramps due to gas, and temporary listlessness; would be beneficial in malarial and feverish conditions due to chills and colds; would check chills and malarial fever, build resistance, and be efficacious in treating colds, stuffiness of nasal passages, simple headache, neuralgia, and malarial fever; would help keep the system clean and invigorated, and generally relieve within a few hours the distress and misery of common colds; would not be habit forming; was a tonic and possessed value as a treatment in emergencies, as suggested by the name "Life Line." Further misbranded because fabricated from two or more ingredients and label did not give common or usual name of each, including quantity, kind and proportion of alcohol present. Also misbranded because label falsely represented that product contained boneset, iron and ammonium citrate and citric acid in therapeutically important amounts.—*[D. D. N. J., F. D. C. 683; February 1943.]*

SMH Pur-Erb Compound No. 1 and Helena Pur-Erb Special No. 3.—James M. Odell, trading as Home Treatment Service, Pur-Erb Products and Herbal Health Products, Chicago. Shipped Dec. 17, 1940. Composition: first-named product consisted essentially of extracts of plant drugs, including laxatives such as aloes, senna and cascara sagrada, and water; second-named product consisted essentially of plant drugs, solid plant material and water. SMH Pur-Erb Compound misbranded in that label directions were indefinite as to amount; that label failed to give adequate warning against unsafe methods or duration of administration, particularly to caution that frequent or continued use might result in dependence on laxatives; that label suggested that product was efficacious in treatment of chronic constipation, was a health prescription and would improve the general health; that it was an adequate remedy for constipation and colitis, and that it was effective in treating serious, stubborn, obstinate or severe cases of constipation or colitis. Further misbranded in that certain information that the Act requires on label was not so placed thereon as to make it intelligible to the ordinary reader, since much of it was stated in German, Polish and Lithuanian, and there was no accurate statement, even in these foreign languages, of the quantity of contents in terms of measure, or common or usual name of each active ingredient. "Helena" Pur-Erb Special No. 3 misbranded in that label failed to give adequate directions for use and limitation as to frequency and duration of use. Also misbranded because of false representations in the name "Rx Kid-Ne Herb Compound" and statements representing product as an efficacious treatment of diseased kidney, sluggish conditions of genito-urinary system and all human ills. Further misbranded because made from two or more ingredients and label did not properly declare these under their common or usual names, or give quantity of total contents in terms of measure.—*[D. D. N. J., F. D. C. 662; February 1943.]*

Correspondence

SPREAD OF INFANTILE PARALYSIS

To the Editor:—The title of your editorial of Dec. 4, 1943, "The Modes of Spread of Infantile Paralysis," seemed a priori to be particularly well chosen for discussing Maxcy and Howe's "The Significance of the Finding of the Virus of Infantile Paralysis in Sewage: A Review" (to be published). It would appear futile in the light of our present knowledge of the natural history of the disease to insist on a "unitarian" theory of spread. The promise of the title, however, seemed to us to fall short of fulfilment.

It is stated in the editorial that "the virus can live only a short time in sewage so far as known now and that there is no likelihood of its surviving the passage through water purification plants." Although it is not possible to say at present if virus in sewage constitutes a link in the infection chain or not, nevertheless it has been found hardy enough to survive various laboratory manipulations taking from one to three days preparatory to inoculation (Paul, J. R.; Trask, J. D., and Gard, Sven: Poliomyelitic Virus in Urban Sewage, *J. Exper. Med.* **71**:765 [June] 1940. Unpublished results obtained by the Yale Poliomyelitis Study Unit). Indeed, samples of sewage have on occasion been kept at 7 C. up to eighteen days and have been found to contain virus. Virus has been recovered, moreover, from the effluent of one Chicago disposal plant (unpublished results just cited. It should be emphasized that treatment at this plant is mild, being settling of solids, followed by discharge of the effluent, and digestion of the solids in Imhoff tanks). The detection of virus in two successive tests from a New York sewage plant fifteen, and from a Chicago sewage plant seventeen days apart (unpublished results) would indicate that even if virus is destroyed rapidly in this medium it may be as rapidly replaced.

As to the statement that there is "no likelihood of its [the virus] surviving the passage through water purification plants," there is not enough evidence available to say whether or not virus is stable enough to survive water treatment. Although all laboratory experiments with monkey adapted or rodent strains of virus are admittedly unnatural, they may offer leads as to what takes place in nature. It has been found that a low concentration of residual chlorine destroys a fixed amount of Theiler's mouse poliomyelitis virus, but this same amount of virus in the presence of extraneous organic matter survives more than ten times this amount of residual chlorine (unpublished results).

With regard to the possibility of virus entering water supplies from contaminated sewage, the evidence against poliomyelitis being a water borne disease is set forth and on this basis the conclusion is stated that the presence of the "virus of infantile paralysis in sewage is without significance as far as the general spread of the disease is concerned." Although it is not clear how virus may travel from sewage—if indeed it ever does—to the susceptible human being, it would appear the part of wisdom to consider, in addition to water, other possible agents such as certain forms of insect, avian and mammalian life which may come into contact with both sewage and man. The arguments quoted against flies as playing a role in the transmission of the disease are (1) "Flies are not invariably associated with the disease" and (2) "the disease would not 'attack children preponderantly, as is the case, were it transmitted primarily by the fly or any other insect.'" To be sure flies are not invariably associated with the disease, as in winter poliomyelitis (Ward, Robert, and Sabin, A. B.: The Presence of Poliomyelitis Virus in Human Cases and Carriers During the Winter, *Yale J. Biol. & Med.*, to be published). Concerning the second argument, one would expect just such a high incidence in children if adults were immune because of infection—preponderantly abortive or nonparalytic—acquired in childhood, or immunity acquired by other, as yet unrecognized, means. Analogies obtain in such insect borne diseases as yellow fever and dengue where, although epidemics have occurred either among susceptible newcomers to endemic regions or among the nonimmune populations of newly invaded localities, nevertheless most adult natives of endemic regions are immune, probably because of unrecognized childhood infections (Simmons, J. S.: Insects as Vectors of Virus Diseases, in Virus and Rickettsial Diseases, Harvard University Press, 1940, p. 145). Although it is true that in epidemics of summer arthropod borne encephalitides as the western equine and St. Louis types adults are chiefly affected, conditions of exposure may be a factor; in the one recorded outbreak (Massachusetts, 1938) of eastern equine encephalomyelitis, 70 per cent of the cases occurred in children under 10 years of age. It should not be forgotten that of 24 batches of flies trapped in various parts of the continent (from New Brunswick, Canada, Connecticut, Ohio, Alabama, Georgia and Texas) within ten days of the onset of the last case of poliomyelitis in a given locality and tested in cynomolgus monkeys, thirteen yielded the virus, and in one case the number of flies carrying a monkey paralyzing dose was found to be as few as fourteen (Paul, J. R.; Trask, J. D.; Bishop, M. B.; Melnick, J. L., and Casey, A. E.: The Detection of Poliomyelitis Virus in Flies, *Science* **94**:395 [Oct. 24] 1941. Sabin, A. B., and Ward, Robert: Flies as Carriers of Poliomyelitis Virus in Urban Epidemics, *ibid.* **94**:590 [Dec. 19] 1941. Trask, J. D.; Paul, J. R., and Melnick, J. L.: The Detection of Poliomyelitis Virus in Flies Collected During Epidemics of Poliomyelitis: I. Methods, Results and Types of Flies Involved, *J. Exper. Med.* **77**:531 [June] 1943). The probability of obtaining virus from flies trapped in epidemic areas would appear to be as good as that of obtaining it from stools collected in the acute stage of the disease and certainly better than that of finding it in nasopharyngeal washings.

Contact infection is admittedly a means of spreading infantile paralysis, but that it is the "most important means" has not been proved to our satisfaction. The phenomenon of seasonal incidence which has been stressed by Paul (The Epidemiology of Poliomyelitis, in Infantile Paralysis, Waverly Press, Inc., 1941, p. 133; Poliomyelitis, in Harvey Lectures 1942-43, to be published) is not explained by contact infection. Furthermore, it may be significant that in certain localities outbreaks of summer arthropod borne encephalitides have occurred simultaneously with poliomyelitis (Donovan, C. R., and Bowman, Maxwell: Some Epidemiological Features of Poliomyelitis and Encephalitis, Manitoba, 1941, *Canad. Pub. Health J.* **33**:246 [June] 1942. Buss, W. C., and Howitt, Beatrice, F.: Human Equine Encephalomyelitis in Kern County, California, 1938, 1939 and 1940, *Am. J. Pub. Health* **31**:935 [Sept.] 1941.

The editorial goes on to say that "everything in human power must be done to prevent contact infection. Unquestionably there is need now for closer isolation than has been carried out in the past." If indeed it were desirable to do these things—and there is no evidence that such procedures would control poliomyelitis—may we ask how, with our present methods of diagnosis, is it possible to prevent contact infection by closer isolation when for every confined paralytic case 10 or more

The work carried out in the laboratory of the Yale Poliomyelitis Study Unit has been aided by a grant from the National Foundation for Infantile Paralysis.

abortive or inapparent cases are estimated to be in circulation? In this connection we should recall that once it was common practice to place poliomyelitis patients in open wards together with other patients. The rarity of hospital infection from patient to patient and from patient to hospital personnel would militate against the philosophy of greater segregation as a solution or even as an aid to the problem. Indeed, no one has yet demonstrated that the closing of schools, theaters and other gathering places, such as bathing beaches, has in any way altered the course of an epidemic. It is a striking fact that in the fall, when schools open and chances for contact infection become greater among children, epidemics of infantile paralysis fade away.

Our aim in this communication is not to make a plea for sewage or flies as vehicles in the transmission of the disease but to point out that contact infection has not been demonstrated to be the "most important means" of spreading poliomyelitis. We believe that it is wise to keep our minds receptive to evidence which eventually may show other "modes of spread of infantile paralysis" more in keeping with our present knowledge of the natural history of the disease.

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Joseph L. Melnick, Ph.D.
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To the Editor:—The editorial entitled "The Modes of Spread of Infantile Paralysis" (The Journal, Dec. 4, 1943) merits a word of reply from more than one corner of the world. This particular reply, however, is not presented in the form of a rebuttal, for the subject under discussion is not one for debate, and no amount of argument can yet make up for our present lack of factual information on the modes of spread of infantile paralysis.

The writer of this editorial, which is based on Maxcy and Howe's paper to be published in the *Sewage Works Journal*, leaves the impression that these authors have been more or less didactic in their statements about the spread of poliomyelitis. Thus, in connection with the demonstration of the virus in flies in epidemic areas, Maxcy and Howe are quoted as saying that the disease would not "attack children preponderantly, as is the case were it transmitted primarily by the fly or any other insect." This statement overlooks the fact that adults may not acquire certain insect borne diseases because they are immune. For instance, the part which flies play in the spread of some of the common types of bacillary dysentery is such as to allow us to use this disease as a homely example. The differential prevalence and severity of bacillary dysentery in infants as opposed to adults is familiar from one end of the world to the other.

And also there is the editorial statement that "present knowledge points to contact infection as the most important means of spreading infantile paralysis." For a disease in which the means of spread are unknown, this seems like a broad generalization. That contact infection (not as droplet infection but in the sense of direct contact with an infectious individual) may play a part in the spread of this disease few can deny, but that it is the most important means of spreading the disease is news. Perhaps new facts have been discovered, but without them contact infection seems too simple an explanation to fit the many obscurities which today cloud the epidemiologic picture of this disease. Contact infection has never satisfactorily explained the sharp summer incidence of poliomyelitis in certain temperate climates, such as the northern part of the United States, and Canada.

John R. Paul, M.D.

EXCRETION OF URINE WHILE TAKING SULFONAMIDES IN THE TROPICS

To the Editor:—In the article by Hageman, Harford, Sobin and Ahrens (The Journal, Oct. 9, 1943, p. 325) mention is made of "armed forces stationed in warm climates, where it is exceedingly difficult to maintain a satisfactory urinary output." In several instances in the literature I have noted casual mention of the obstacle of maintaining an ample excretion of urine in the tropics. This was not my experience during a study of sulfonamide toxicity at an evacuation hospital located in the tropics of the Southwest Pacific. Soldiers were able to maintain an adequate output with only a moderate amount of urging.

In 50 men receiving a routine sulfadiazine regimen an accurate intake and output was kept. The average output was 1,700 cc. and the average intake 2,500 cc. over the twenty-four hour period; 4,000 cc. intake was rarely reached; 1,000 cc. was considered the minimal safe output, and on only two occasions was it necessary to resort to infusions to raise the output; each time the intake had been low because of nausea and vomiting.

The majority of cases were dirty battle wounds. Sulfadiazine orally, 6 Gm. per day, and sulfanilamide topically were used exclusively. Alkalis were not used. The average duration in this series in which a patient had an intake-output record was seven days, the minimal five days and the maximal twenty-one days. Almost 200 blood sulfadiazine levels were determined and ranged from 5 to 15 mg. per hundred cubic centimeters, not one being below 5 mg.

Exact climatologic data were not released, but the temperature was oppressively warm and the humidity excessive to the point that the slightest exertion caused profuse perspiration. These observations on fluid balance seemed so paradoxical that we were led to hypothesize an obscure mechanism by which this satisfactory balance was obtained so effortlessly. Extension of the investigation and formation of other conclusions were barred by a transfer.

James H. Ferguson, Captain, M. C., A. U. S.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in The Journal, Feb. 19, p. 528.

NATIONAL BOARD OF MEDICAL EXAMINERS

National Board of Medical Examiners: *Part I-II.* Various centers, May 1-3. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

American Board of Anesthesiology: *Oral. Part II.* Chicago, June 12-16. Final date for filing application is March 12. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

American Board of Dermatology and Syphilology: *Written.* Various large cities, May 8. *Oral.* Chicago, June 9-10. Final date for filing application is April 1. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

American Board of Internal Medicine: *Oral.* Chicago, March 30-31. Final date for filing application is March 20. *Written.* Various centers Oct. 16. Candidates in military service may take examination at their place of duty. Final date for filing application is August 15. Asst. Sec., Dr. W. A. Werrell, 1301 University Ave., Madison, Wis.

American Board of Obstetrics & Gynecology. *Oral. Part II.* Pittsburgh, June 7-13. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

American Board of Ophthalmology: Chicago, Oct. 5-7. Sec., Dr. S. Judd Beach, P. O. Box 1940, Portland, Me.

American Board of Otolaryngology: *Oral.* New York City, June 1-4. Sec., Dr. Dean M. Lierle, University Hospitals, Iowa City, Ia.

American Board of Pediatrics: *Oral.* New York, March 25-26, and San Francisco, May 6-7. Sec., Dr. C. A. Aldrich, 115½ First Ave. S.W., Rochester, Minn.

American Board of Psychiatry and Neurology: *Written.* Various centers, March 31. *Oral.* Philadelphia, May 12-13. Final date for filing application is Feb. 29. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Compensation of Physicians: Right of Physician Selected by Injured Employee to Recover from Employee Fees in Excess of Maximum Set Out in Workmen's Compensation Act.—In the course of his employment as a fire chief, Johnson was injured in a collision. His family physician immediately attempted to render treatment but, diagnosing the injury as a skull fracture, called in Dr. Werden, a specialist in brain surgery. The patient was unconscious when the brain surgeon arrived and did not regain consciousness for some weeks thereafter. Dr. Werden advised an immediate operation, and with the consent of Johnson's wife and the help of the family physician it was performed without delay. Thereafter Dr. Werden cared for the patient and a good recovery resulted. According to Dr. Werden, when he first saw Johnson he was informed by the family physician that the case was not a workmen's compensation case, and Mrs. Johnson asked him to care for Johnson "as a private case" and she and her husband would see that he was paid accordingly. Some weeks after the accident, after Johnson was so far recovered as to discuss the case and after it appeared that the injuries were to be compensable under the workmen's compensation act, it was agreed between the surgeon and Johnson that a fee of approximately one thousand dollars would be reasonable and Johnson agreed to pay any difference between this sum and the amount that would be allowed for medical fees under the compensation act. Subsequently the California industrial accident commission allowed an aggregate fee of $481.48. The physician then assigned his claim against Johnson to the Credit Bureau of San Diego, which instituted an action against Mr. and Mrs. Johnson Jan. 8, 1943, seeking to recover $568.52, the balance of the $1,000 fee agreed on plus $50 claimed by Dr. Werden for attendance as an expert witness in a suit brought by Johnson against the operator of the motor vehicle that collided with him. On Jan. 11, 1943 Johnson sent the physician $200 and on the trial of the suit for fees this payment was taken into account in the judgment in the plaintiff's favor that resulted. Johnson and his wife then appealed to the appellate department, superior court, San Diego County, Calif.

Johnson and his wife contended that the claim of the plaintiff, pursuant to the contract between Dr. Werden and them, is against public policy and void, in that the workmen's compensation act of California and the constitutional amendment supporting it afford a complete and exclusive manner and procedure for adjusting all controversies as between an injured employee and his attending physician. There can be no doubt, answered the court, that as between an injured employee and his employer or insurance carrier the theory of Johnson and his wife is sound. As was said in *Nelson* v. *Associated Indemnity Corporation*, 19 Cal. App. (2d) 564, 66 P. (2d) 184:

> It is well settled that the Workmen's Compensation Act provides substantially that, where the specified conditions exist, the right to recover compensation in a proceeding before the Industrial Accident Commission shall be, as against the employer, the exclusive remedy of the employee.

In the event, however, that a claim is presented by a physician for treatment rendered or prescribed for an injured employee and it appears that the physician was employed independently of procedure by the industrial accident commission, the problem becomes far more complicated. The right to make lawful contracts is a right enjoyed by all citizens under the protection of the fourteenth amendment of the constitution of the United States. In this case it is apparent that Dr. Werden having been called in by the attending physician, with the knowledge and approval of the wife of the injured employee, was by implication, if not indeed by express terms, proceeding under contract with Johnson and his wife. Can it be said that the workmen's compensation act and the provisions of the state constitution authorizing the statute were intended to abrogate the constitutional right of the parties so to contract? In approaching the problem we cannot assume that the legislature either wilfully or ignorantly intended to violate the organic law of the United States. If two theories may reasonably proceed from the wording of the act, one in harmony with the organic law as expressed in the federal constitution and the other in conflict therewith, we must assume that the legislature intended the theory in harmony rather than the one in conflict. After Johnson's partial recovery and when he was in a mental condition to contract, he agreed with Dr. Werden that the schedule of fees provided by the industrial accident fund was inadequate to compensate him for the services rendered and that his fee should be approximately $1,000. It is immaterial that this contract was entered into after the operation was performed rather than before. If, prior to the treatment, the patient was mentally able to contract, the contract would have been bilateral. After the services were rendered the contract was unilateral. In either event the consideration was sufficient and the agreement binding. We cannot say it is contrary to public policy, but, on the contrary, it is in harmony with the constitutional rights of the parties to enter into a lawful contract. We do not regard the circumstance that Dr. Werden in fact got part of his compensation from the insurance carrier as changing the situation.

Johnson and his wife next contended that the facts of the case do not warrant a liability on the part of Mrs. Johnson. The California Civil Code, section 171, provides, said the court, that the separate property of the wife is liable for the payment of debts contracted by the husband or wife for the necessaries of life furnished to them or either of them while they are living together. That the services rendered by Dr. Werden were necessaries of life cannot be disputed. The saving of the life of Johnson was as vital to his wife as to himself. As was said in *Evans* v. *Noonan*, 20 Cal. App. 288, 128 P. 794, in considering what constituted necessaries of life:

> In the present case, however, there is nothing which requires us to go further than to say that, under our law, it most certainly at the least means the common necessaries of life, or such things as are proper and requisite for the sustenance of man. With equal certainty these include, besides food, clothing and shelter, such medical attentions in cases of illness as are absolutely requisite to relieve physical suffering and pain and to overcome or conquer disease, if by such attentions it can be done.

In order to subject the wife to the liability created by the Civil Code, continued the court, it is necessary to join her as a party defendant with her husband.

Johnson and his wife next challenged the propriety of the action of the trial court in including an item of $50 in the judgment, which item is alleged to be due to Dr. Werden as a witness fee during the trial of the case in which he was called as a witness by Johnson, as noted. There was no evidence in the record as to an agreement between the Johnsons and Dr. Werden as to what his fee for serving as a witness should be, and in the absence of an express agreement the court held that the witness fees provided by statute were applicable. The California statute apparently provided a witness fee in civil cases of two dollars a day and mileage actually traveled, one way only, of 10 cents a mile. Under the circumstances the court thought it proper to reduce the charge to the statutory fee of two dollars plus mileage, which the court assumed was one mile.

Accordingly the judgment in favor of the plaintiff was reduced by $47.90.—*Credit Bureau of San Diego, Inc. v. Johnson, et ux, 142 P. (2d) 963 (Calif., 1943).*

Society Proceedings

COMING MEETINGS

Alabama, Medical Association of the State of, Montgomery, April 18-20. Dr. D. L. Cannon, 519 Dexter Avenue, Montgomery, Secretary.
Arizona State Medical Association, Phoenix, April 14-15. Dr. Frank J. Milloy, 112 N. Central Ave., Phoenix, Secretary.
Arkansas Medical Society, Little Rock, April 17-18. Dr. W. R. Brooksher, 602 Garrison Avenue, Fort Smith, Secretary.
Florida Medical Association, St. Petersburg, April 13-14. Dr. Shaler Richardson, 111 West Adams St., Jacksonville, Secretary.
Iowa State Medical Society, Des Moines, April 21-22. Dr. Robert L. Parker, 3510 Sixth Avenue, Des Moines, Secretary.
Minnesota State Medical Association, Rochester, April 13-15. Dr. B. B. Souster, 493 Lowry Medical Arts Bldg., St. Paul, Secretary.
New Orleans Postgraduate Medical Assembly, New Orleans, March 6-9. Dr. Joseph S. D'Antoni, 1430 Tulane Ave., New Orleans 13, Secretary.
Northern Tri-State Medical Association, Toledo, Ohio, April 11. Dr. Oscar P. Klotz, 127 W. Hardin St., Findlay, Ohio, Secretary.
Tennessee State Medical Association, Nashville, April 11-13. Dr. H. H. Shoulders, 706 Church St., Nashville, Secretary.
Tri-States Medical Association of the Carolinas and Virginia, Charlotte, N. C., Feb. 28-29. Dr. James M. Northington, 804 Professional Bldg., Charlotte, N. C., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

206:701-832 (Dec.) 1943

Gradenigo Syndrome Complicated by Pneumococcic Meningitis: Recovery After Intensive Treatment with Penicillin and Sulfadiazine. L. F. Barker.—p. 701.
Fever Curve of Therapeutic Fads. O. H. Perry Pepper.—p. 703.
Detrimental Effect of Frequent Transfusions in Treatment of Patient with Hemophilia. F. L. Munro and H. W. Jones.—p. 710.
*Treatment of Agranulocytosis with Sulfadiazine. N. Nixon, J. F. Eckert and K. B. Holmes.—p. 713.
Acute Traumatic Heart Disease: Case of Myocardial Contusion with Recovery. R. V. Lee, N. T. Ussher and G. H. Houck.—p. 722.
Intravascular Parathyroid Grafts. M. R. Reid and J. Ransohoff.—p. 731.
*Carcinoma of Duodenum. J. W. Howard.—p. 735.
Prevention of Renal Precipitation of Sulfadiazine in Dogs. O. J. Jensen.—p. 746.
*Clinical and Epidemiologic Features of an Outbreak of Primary Atypical Pneumonia of Unknown Etiology Among Hospital and Medical School Personnel. L. E. Young, M. Storey and A. J. Redmond.—p. 756.

Treatment of Agranulocytosis with Sulfadiazine.—Nixon and his collaborators report 3 instances of severe agranulocytosis developing in the course of sulfadiazine treatment. The complication occurred in the course of scarlet fever in 1 patient and of primary atypical virus pneumonia in 2. Each patient had received moderate doses of sulfadiazine for two or more weeks prior to the onset of bone marrow depression. Transfusion, pentose nucleotides and liver extract in 1 case were without beneficial effect. The drug treatment was resumed on the assumption that the streptococcus toxin might be the etiologic agent of agranulocytosis. The development of agranulocytosis during the pneumonic infections contradicted the assumption that the hemolytic streptococcus had been responsible in the first case. Sulfadiazine and convalescent serum were used in the other 2 cases. Although the infectious processes may have played a part, sulfadiazine probably was the primary factor in causing the agranulocytosis. Subsequent administration of large amounts of the drug seemed responsible for the ultimate recoveries. Agranulocytosis due to sulfadiazine administration during acute infections may be successfully treated by continued administration of the same drug. Spontaneous regeneration of polymorphonuclear leukocytes by the depressed bone marrow can occur during administration of large amounts of sulfadiazine even though this drug was responsible initially for the depression. Sulfadiazine appears to be effective in controlling sepsis, which usually accompanies agranulocytosis.

Carcinoma of Duodenum.—Howard reports 3 cases of primary duodenal carcinoma, 1 of which was associated with erosion of the superior mesenteric artery. There were recorded 55 carcinomas of the duodenum among 117,433 necropsies, an incidence of 0.047 per cent. In a group of 10,340 cases of carcinoma of the intestine the incidence of carcinoma of the small intestine amounted to 1.47 per cent. Of 163 cases of carcinoma of the small intestine the duodenum was involved in 37 per cent, the jejunum in 35 per cent and the ileum in 28 per cent, indicating, contrary to frequently quoted opinion, that the duodenum and the jejunum are more likely to undergo carcinomatous changes than the ileum. Carcinomas of the duodenum are generally conceded not to arise from preexisting ulcers and are seldom associated with polyposis. These tumors more commonly occur in a stenosing form and less frequently assume a polypoid structure. They metastasize late and usually then involve only adjacent tissues. Carcinoma of the duodenum occurs approximately three times more often in males than in females. The complaints are chiefly referable to the stomach, although they are often mistaken for chronic cholecystitis, peptic ulcer or primary anemia. Vague epigastric distress with occasional attacks of pain, anorexia, weakness and loss of weight are usually present. Nausea and vomiting may occur, associated with recurrent attacks of intestinal obstruction. Anemia frequently will be the only presenting symptoms. Occult blood in the stools is a rather consistent finding. Roentgenograms are of increasing aid. The average duration has been from six to fourteen months. Unless diagnosed and treated early, the mortality is extremely high.

Outbreak of Primary Atypical Pneumonia.—An epidemic of primary atypical pneumonia broke out abruptly in the student body and staff of the University of Rochester School of Medicine and Dentistry and the Strong Memorial Hospital. Young and his associates report the clinical findings in 40 cases from the institutional personnel who were hospitalized with definite roentgenographic evidence of pneumonia between Aug. 1 and Sept. 30, 1942 and the results of epidemiologic studies of a slightly larger group of patients and of 1,587 contacts. All except 3 of the patients were between 19 and 30 years of age. The relative homogeneity of this group of patients and the circumscribed nature of the outbreak make it apparent that a single etiologic agent was responsible for virtually all the cases. Primary atypical pneumonia is difficult to diagnose on clinical and epidemiologic grounds, and therefore a "missed case" may be of great importance in its spread. Infection usually produces a characteristic clinical picture, but this can easily be confused with a number of other diseases. A positive diagnosis is established only when x-ray examination of the chest reveals typical findings, bacteriologic studies are negative and the subsequent course of the illness is consistent. Under ordinary conditions of exposure, primary atypical pneumonia is not highly communicable. If subclinical cases or healthy carriers occur they are probably of minor importance in transmission. Treatment is symptomatic only. Sulfonamide therapy is ineffective against the primary (probably virus) infection, but because of diagnostic difficulties its temporary use in full doses is obligatory for seriously ill patients until bacterial pneumonia, sepsis and other infections responding to chemotherapy can be excluded. The use of sulfonamide therapy later in the disease depends on the nature of complications. Transfusions of whole blood or plasma from convalescent donors appear to have no specific effect.

American Journal of Psychiatry, New York

100:301-442 (Nov.) 1943. **Partial Index**

Psychoses Occurring in Soldiers During the Training Period. Margaret Hitschman and Zuleika Yarrell.—p. 301.
Review of Cases of Veterans of World War II Discharged with Neuropsychiatric Diagnoses. C. B. Huber.—p. 306.
Ratio of Voluntary Enlistment to Induction in Various Types of Neuropsychiatric Disorders. F. Lemere and E. D. Greenwood.—p. 312.
Psychiatric Casualties Among Defense Workers. M. Rosenbaum and J. Romano.—p. 314.
Enuresis in the Navy. A. Levine.—p. 320.
Tattooing Among Selectees. J. Lander and H. M. Kohn.—p. 326.
Psychiatric Approach in Problems of Community Management (From a Study of a Japanese Relocation Center). A. H. Leighton and others.—p. 328.
Myokinetic Psychodiagnosis of Dr. Emilio Mira. J. L. Simon.—p. 334.
Study of Forty Male Psychopathic Personalities Before, During and After Hospitalization. W. L. Heaver.—p. 342.
Law Enforcement Aspects of Delinquency Problem. E. P. Coffey.—p. 347.
*Immediate and Follow-Up Results of Electroshock Therapy. L. H. Smith, D. W. Hastings and J. Hughes.—p. 351.
Borderline Cases Treated by Electric Shock. A. Myerson.—p. 355.
Electroencephalograms in Post-Traumatic Epilepsy: Preoperative and Postoperative Studies. H. Jasper and W. Penfield.—p. 365.
Electroencephalogram in Late Post-Traumatic Cases. M. Greenblatt, with technical assistance of Marie M. Healey and Gertrude A. Jones.—p. 378.
Emotional Disturbances Following Upper Respiratory Infection in Children. Helen G. Richter.—p. 387.
Psychoses in Patients with Edema. N. Roth.—p. 397.
Incidence of Mental Disease in State of New York. C. Tietze.—p. 402.

Electroshock Therapy.—According to Smith and his associates electroshock therapy was practiced for over two years at the Pennsylvania Hospital. During this time 279 patients have received treatment. Electroshock treatment is effective in the

treatment of involutional melancholia and manic-depressive psychosis. Manic patients do not hold their recovery as well as those who have an agitated depression. There is no evidence that electroshock treatments may prevent future psychotic attacks or that it might interfere with spontaneous clinical recovery. Electroshock therapy is not effective in schizophrenia. It is of doubtful value in psychoneuroses. Traumatic skeletal injuries may be decreased by the use of "Inta Costrin." Cardiac and pulmonary complications, vasomotor collapse, spasticity and subconjunctival hemorrhages may develop. Memory changes always occur during treatment but do not seem to be permanent.

American Journal of Public Health, New York

33:1387-1508 (Dec.) 1943

Penicillin Treatment of Early Syphilis: Preliminary Report. J. F. Mahoney, R. C. Arnold and A. Harris.—p. 1387.
Penicillin Therapy in Sulfonamide Resistant Gonorrhea in Men. C. J. Van Slyke, R. C. Arnold and M. Buchholtz.—p. 1392.
Planning Today for Public Health Administration Tomorrow. F. J. Underwood.—p. 1395.
Evolving Pattern of Tomorrow's Health: I. Prerequisites to Improved Public Health. J. W. Mountin.—p. 1401.
Id.: II. Postwar City. C. E. A. Winslow.—p. 1408
Id.: III. Health Department of the Future. H. F. Vaughan.—p. 1414.
Id.: IV. The Health Worker of the Future. R. M. Atwater.—p. 1419.
Function of Health Officer in Control of Tuberculosis Among Veterans. L. I. Dublin.—p. 1425.
Public Health Degrees and Certificates Granted in the United States and Canada During Academic Year 1942-1943.—p. 1430.
*Air Disinfection in Day Schools. W. F. Wells.—p. 1436.
Some Medical Aspects of Protein Foods. F. J. Stare and G. W. Thorn. p. 1444.
Studies on Epidemic Diarrhea of Newborn: Isolation of a Filtrable Agent Causing Diarrhea in Calves. J. S. Light and H. L. Hodes. —p. 1451.
Streptococcic Infections in Naval Training Station. F. F. Schwentker, H. L. Hodes, L. C. Kingsland Jr., B. M. Chenoweth Jr. and J. L. Peck.—p. 1455.
Laboratory Methods Used in Determining Value of Sulfadiazine as a Mass Prophylactic Against Meningococcic Infections. D. M. Kuhns and H. A. Feldman.—p. 1461.

Air Disinfection in Day Schools.—Wells states that epidemic spread of contagion in irradiated classrooms during winter months appears to have been checked for six years at the Germantown Friends School and for three years in two primary schools at Swarthmore. Measles, mumps and chickenpox prevailed during the same period in unirradiated classrooms in these schools and in nearby primary schools. Epidemic spread of mumps in irradiated classrooms (of one of these schools) exposed during the fall was checked with the onset of cold weather. Failure of the lights to control the epidemic spread of mumps during the moist mild autumn weather suggests that the viricidal activity of ultraviolet light decreases with humidity. When respiratory infection is normally most prevalent during cold weather and indoor air is driest, irradiation was efficient. The importance of the classroom in the epidemic spread of childhood contagion through the community of Swarthmore was revealed by radiant disinfection of the air of the primary schools. The design which yields the highest average intensity per unit of ultraviolet light radiated into a room will generally accomplish the most disinfection per unit of intensity and prove hygienically more effective per unit of disinfection. An installation with several times the radiation per cubic foot performed less consistently, according to epidemiologic indexes, than one with higher efficiencies of irradiation and disinfection. It may seem contradictory that rooms with double the disinfection, five times the irradiation and ten times the radiation should prove to be hygienically less efficient, though this is consistent with the lower sanitary indexes of disinfection and irradiation efficiencies. It indicates that respiratory organisms travel less frequently from person to person through lethal zones. Bacteriologic tests showed that rotation of the reflectors to throw a horizontal beam across the room increased irradiation more than threefold and disinfection more than tenfold. That an even greater hygienic efficiency can be expected has been indicated by the superior epidemiologic indexes within rooms with one-half the disinfection and one-fifth the irradiation but with higher disinfection and irradiation efficiencies.

Archives of Ophthalmology, Chicago

30:707-840 (Dec.) 1943

Visual Functions in Strephosymbolia. S. T. Orton.—p. 707.
*Traumatic Enophthalmos. R. L. Pfeiffer.—p. 718.
Recurring Attacks of Concomitant Exotropia, Each Followed by Transient Esotropia: Migraine the Probable Cause. F. H. Verhoeff.—p. 727.
Keratoconus Posticus Circumscriptus. I. H. Leopold.—p. 732.
Classification of Experimental Cataracts in Rat: Recent Observations on Cataract Associated with Tryptophan Deficiency and with Other Experimental Conditions. W. Buschke.—p. 735.
Dystrophic Cataracts and Their Relation to Other "Metabolic" Cataracts. W. Buschke.—p. 751.
Fitting of Contact Lenses. P. L. Salvatori and A. Oriani.—p. 763.
Neurodermatitis with Cataract: Report of 2 Cases. C. E. McDannald. —p. 767.
Retinal Detachment and Trauma. A. Knapp.—p. 770.
Plastic Shell for Use in Simple Evisceration of Globe. S. R. Gifford. —p. 775.
Local Anesthesia in Ophthalmology. W. S. Atkinson.—p. 777.

Traumatic Enophthalmos.—Pfeiffer states that enophthalmos developed subsequent to the injury in 53 of 120 cases of fracture of the bones of the face in which the orbit was involved. Fracture of the orbit was noted in every case of traumatic enophthalmos. In 29 cases external deformity occurred. In these cases fracture was obvious. In 24 cases fracture was internal or deep in the orbit, unassociated with solution of continuity or deformity of the margin of the orbit or of the surface structures. In all these 24 cases there was displacement of the eye of 1 to 9 mm. as measured by the Hertle exophthalmometer. In most of the cases the eye was displaced posteriorly 2, 3 or 4 mm. In the cases of more severe injury the eye was displaced posteriorly and slightly nasally. The displacement of the eye would have been overlooked clinically in a number of cases if the exophthalmometer had not been used on the suggestion of the roentgenographic report after the signs of recent trauma had subsided. Patients exhibiting signs of recent injury, such as ecchymosis and edema of a "black eye," should have an x-ray examination for possible internal fracture of the orbit. The development of enophthalmos after trauma is always an indication of fracture, usually of the floor and/or the nasal wall, frequently without solution of continuity of other parts of the orbit. The posterior displacement of the eye is due to the increase in the capacity of the orbit, which results from the fragmentation of the floor with prolapse of orbital content in some degree into the antrum and to fracture of the lamina papyracea with compression of the ethmoid cells. Treatment may not be needed if the enophthalmos is not severe. If diplopia is present in cases of less serious displacement the simpler means of relief may be operation on the extraocular muscles. In severe enophthalmos operation to raise the orbital structures from the antrum may be gratifying to the patient.

Bulletin of Los Angeles Neurological Society

8:97-154 (Dec.) 1943

Traumatic Intracranial Aerocele: Some Comments on Its Pathology, Based on Review of Literature and Study of Three Autopsied Cases. C. B. Courville.—p. 97.
Gross Calcareous Deposits in Corpora Striata and Dentate Nuclei: Report of 2 Cases, with Comments on Certain Etiologic Factors. C. W. Rand, O. W. Olsen and C. B. Courville.—p. 118.
Nuclear Changes in the Anterior Horn Cells Following Local Injury to the Spinal Cord. F. W. Bailey.—p. 129.

Bull. of the U. S. Army Med. Dept., Washington, D. C.

71:1-90 (Dec.) 1943

Psychiatric Problems in Army Hospitals. W. C. Menninger.—p. 31.
Portable Surgical Hospital at Buna. G. A. Marks.—p. 43.
Acute Enteritis in North Africa. G. H. Gowen.—p. 55.
*Inspection of Oysters. A. H. Bryan.—p. 59.
Dentigerous Cyst: Case Report. N. V. Clemente.—p. 63.
Copper Sulfate Method for Measuring Specific Gravities of Whole Blood and Plasma. R. A. Phillips, D. D. Van Slyke, V. P. Dole, K. Emerson Jr., P. B. Hamilton and R. M. Archibald.—p. 66.
Unusual Type of Anthrax in Horses and Mules. R. McNellis.—p. 84.
Simplified Full Impression Technic. A. W. Suhr and V. I. Tillar.—p. 87.

Inspection of Oysters.—According to Bryan, oysters contain 6 per cent of protein, 6 per cent of glycogen, 1.9 per cent of fat, vitamins A, B, C, D and G and the minerals calcium, iron, copper, phosphorus, sulfur and iodine. Oysters provide amino acids, arginine, histidine, lysine and tryptophan neces-

sary in the metabolism of the protein molecule. Unwashed oysters are shucked and put into tanks, where air is forced through the water, so that sand and shell fragments are washed out and skimmed. Plant sanitation is similar to that of dairies. Shuckers and canners should be subject to periodic medical examinations with close check on intestinal and respiratory infections of all plant workers. Open oysters will keep three weeks at a temperature of 32 F. and for ten days at 40 F. Fresh oysters up to 7 days old show a p_H of 6.0 or above, but as the oyster gets older, stale or sour the p_H decreases directly proportional to the acidity. Stale oysters have a p_H range from 5.6 to 6.0, and sour oysters have p_H 5.6 or below. The hydrogen potential or p_H range can be determined by a test, which is briefly described.

Canadian Journal of Public Health, Toronto

34:481-528 (Nov.) 1943

Public Health and Social Security. A. Groulx.—p. 481.
Social Aspects of Syphilis Problem. G. Fleming.—p. 487.
Venereal Disease Education in Industry. H. C. Rhodes and D. E. H. Cleveland.—p. 494.
Preparation and Preservation of Typhoid Suspensions for V Agglutination Test. J.-M. Desranleau.—p. 502.
Intradermal Immunization with Diphtheria Toxoid. F. O. Wishart.—p. 509.

34:529-582 (Dec.) 1943

State of Health of People of Canada in 1942. J. J. Heagerty and J. T. Marshall.—p. 529.
*Cheese Borne Epidemic of Typhoid Fever. J. Gauthier and A. R. Foley.—p. 543.
Preparation and Standardization of Johnin Purified Protein Derivative. C. W. McIntosh and H. Konst.—p. 557.
Antitoxin Response to Diphtheria Toxoid of Low Alum Content. C. M. Horner, F. O. Wishart and G. G. Waters.—p. 564.
Contribution of Association's Vital Statistics Section to National Vital Statistics. A. H. Sellers.—p. 568.
Use of Volunteers in Public Health Nursing. Report of Subcommittee of Study Committee, Public Health Nursing Section, Canadian Public Health Association.—p. 571.

Cheese Borne Epidemic of Typhoid.—Gauthier and Foley report an epidemic of typhoid that occurred in the county of Champlain on the northern shore of the St. Lawrence River between Quebec and Montreal. During September 1941, 34 cases of typhoid were reported from three municipalities of the eastern part of the county. In addition 6 cases associated with this outbreak occurred in Montreal and Boucherville. Of the total of 40 cases 6 were fatal, a mortality rate of 15 per cent. The search for the source of infection included investigation of the water supply of cheese and butter factories and of other food supplies. It was determined that each of the 40 patients had eaten cheddar cheese produced in one factory. Milk used at this factory was obtained from eighty farms. There was no history of typhoid among these people, with the exception of a known carrier who had received proper instructions concerning her condition and her duties. It having been proved that contamination of the cheese could not be explained by polluted water or by milk infected by a patient, investigation was directed toward the only known typhoid carrier of the region, who submitted two specimens of feces with positive results. She admitted that during the latter weeks of August she had milked cows against orders and that the milk was sold to the aforementioned cheese factory. A chain of arguments led to this carrier as the causative agent of the epidemic.

Delaware State Medical Journal, Wilmington

15:197-214 (Nov.) 1943

Medicine's Contribution to Industry. L. C. McGee and D. D. Burch.—p. 197.
"War Food and Diabetes." A. Sindoni Jr. and Carolyn N. Bishop.—p. 201.

15:215-232 (Dec.) 1943

Streptococcus Viridans Bacteremia: Report of Case. C. Levy.—p. 215.

Georgia Medical Association Journal, Atlanta

32:381-420 (Dec.) 1943

Views of the News: Wagner-Murray Bill, S. No. 1161. R. de Ovies.—p. 381.

Journal of Clin. Endocrinology, Springfield, Ill.

3:573-624 (Nov.) 1943

Functional Prepuberal Castration in Males. C. G. Heller, W. O. Nelson and A. A. Roth.—p. 573.
*Effect of Chorionic Gonadotropic Hormone and Male Sex Hormone on Eunuchoidism. M. B. Gordon and E. M. Fields.—p. 589.
Clinical, Laboratory and Pathologic Study of a Partially Hypophysectomized Human Female. C. A. Elden and A. J. Kummer.—p. 596.
Plasma Vitamin C Levels in Women During Menstrual Cycle. O. Mickelsen, A. L. Dippel and R. L. Todd.—p. 600.
Relationship of Adrenal Cortex to Metabolism of Fat. D. J. Ingle.—p. 603.
Testosterone Ointment Therapy in 6 Month Old Baby with Severe Genital Retardation. H. Lisser.—p. 613.
Desoxycorticosterone Acetate and Water Exchange. J. A. Anderson.—p. 615.

Effect of Hormones on Eunuchoidism.—Gordon and Fields observed the effects of testosterone propionate, chorionic gonadotropic hormone, and methyl testosterone on genital development, cryptorchism, growth in stature, bone development and personality changes in 3 males with preadolescent types of eunuchoidism. One was a boy of 10 years and 11 months and the other 2 were adults aged 30 and 32 with obesity and unilateral cryptorchism. Normal puberal responses were produced in all 3 patients by treatment with these hormones. Testosterone propionate and methyl testosterone alone or in alternation with chorionic gonadotropic hormone were effective in hypogenitalism. Methyl testosterone maintained the effects of androgenic therapy and was an adequate, substitutive form of male sex hormone. Testosterone propionate produced a partial descent of the testes in both adult eunuchoid males. Supplementary treatment with chorionic gonadotropic hormone resulted in their complete descent. Chorionic gonadotropic hormone and testosterone propionate did not have any clear effect on either height increase or bone development in the boy with eunuchoid gigantism. There was a slowing down of an already accelerated linear growth, but he continued to increase in height at a greater increment than normal. The slightly advanced bone development continued at practically the same level of increase without the induction of epiphysial closure. Both adult eunuchoids showed slight progress in osseous development, but the epiphyses remained open during the period of observation. The height was slightly increased in 1 patient and remained stationary in the other. All 3 patients showed a measurable improvement in their psychic development. Their behavior became more aggressive, and they exhibited more interest in the opposite sex and in their social undertakings and occupational pursuits.

Journal of Pediatrics, St. Louis

23:631-766 (Dec.) 1943

Experimental Investigations as Basis for Treatment of Type B Haemophilus Influenzae Meningitis in Infants and Children. H. E. Alexander and Grace Leidy.—p. 640.
Pathogenesis of Erythroblastosis Fetalis: Review. P. Levine.—p. 656.
Physiology of Hemopoietic System in Infants and Young Children, Including Blood Picture at Birth and in Young Infants. P. Lee.—p. 676.
Diseases of Blood in Infants and Young Children, Including Hemorrhagic States. H. G. Poncher.—p. 680.
Deficiency and Dyshemopoietic Anemias of Infancy and Childhood. R. R. Kracke and W. R. Platt.—p. 691.
Blood Typing and Criteria for Blood Typing Serums. W. Thalhimer.—p. 714.
Jaundice and Conditions Associated with This Phenomenon. Madeleine Fallon.—p. 721.

Journal Pharmacology & Exper. Therapy, Baltimore

79:271-400 (Dec.) 1943. **Partial Index**

Effect of Repeated Applications of Sublethal Concentrations of Germicides on Living Embryonic Tissue Fragments. A. J. Salle.—p. 271.
Metabolism of Paraldehyde. P. Hitchcock and E. E. Nelson.—p. 281.
Studies on Physostigmine and Related Substances. E. Ellis, F. L. Plachte and O. H. Straus.—p. 295.
Blood Levels of Sulfadiazine, Sulfamerazine and Sulfamethazine in Relation to Binding in Plasma. D. R. Gilligan.—p. 320.
Comparison of Pressor Action of Some Optical Isomers of Sympathomimetic Amines. E. E. Swanson, C. C. Scott, H. M. Lee and K. K. Chen.—p. 329.
Pharmacologic Action of N-Methylcytisine. C. C. Scott and K. K. Chen.—p. 334.
Ether Anesthesia and Output of Fluids from Respiratory Tract. E. M. Boyd and J. S. Munro.—p. 346.
Studies on Sulfapyrazine. H. J. Robinson, H. Siegel and O. E. Graessle.—p. 354.
Relation Between Chemical Structure and Physiologic Disposition of Series of Substances Allied to Sulfanilamide. S. H. Fisher, L. Troast, Alice Waterhouse and J. A. Shannon.—p. 373.

Journal of Thoracic Surgery, St. Louis

12:607-696 (Oct.) 1943

*Pulmonary and Blood Gas Studies in Experimental Asphyxia and Asphyxial (Anoxia) Resuscitation: Comparison of Methods of Resuscitation. G. L. Birnbaum and S. A. Thompson, with the technical collaboration of E. Ostrow.—p. 607.
*Asphyxial Resuscitation: Phenomenon and Its Mechanism. S. A. Thompson and G. L. Birnbaum.—p. 624.
Diverticulum of Right Primary Bronchus. J. Arce.—p. 638.
Coronary Ligation in Wounds of Heart: Report of Case in Which Ligation of Anterior Descending Branch of Left Coronary Artery Was Followed by Complete Recovery. E. de Jesus Zerbini.—p. 642.
Problem of Wound Infection in Thoracoplasty. Y. K. Wu, M. B. Pianetto.—p. 648.
Wound Healing After Thoracoplasty in Tropical Hospital. R. A. S. Cory.—p. 653.
Transpleural, Intrathoracic Ligation of the Left Common Carotid Artery: First Case Report. F. P. Coleman.—p. 659.
Bronchoscopy in Pulmonary Tuberculosis. M. S. Lloyd and J. A. Budetti.—p. 668.
Massive Conglomerate Lesions of Silicosis Differentiated from Pulmonary Neoplasm. R. A. Rendich and M. R. Camiel.—p. 686.

Pulmonary and Blood Gas Studies in Experimental Asphyxia.—Birnbaum and his collaborators report experiments on methods of resuscitation. This communication deals with (*a*) obstructive asphyxia and inhalation asphyxia with nitrogen and (*b*) pulmonary and blood gas studies at various stages of asphyxia. The studies were made on dogs. The authors conclude that: 1. Experimental evidence indicates that rhythmic inflation and suction of the lungs in advanced asphyxia, using safe pressures, is superior to manual artificial respiration, rhythmic inflation alone or rhythmic suction alone. 2. Rhythmic inflation and suction of the lungs has definite resuscitative power even when an inert (asphyxiating) gas is used. 3. Rhythmic inflation and suction is a more rapid and more effective stimulator of the circulation and respiration than the other methods tested. 4. Preliminary experimental evidence supports the hypothesis of acidosis and shock in advanced asphyxia, with a relative acarbia as an accompanying state. 5. The hypothesis is presented that in asphyxia the anaerobic conversion of glycogen to lactic acid may supply limited energy for the heart and brain. This, together with the reflex stimulation it affords, could explain the effectiveness of asphyxial (anoxic) resuscitation in advanced asphyxia.

Asphyxial Resuscitation.—Thompson and Birnbaum produced various stages of asphyxia in dogs by obstruction of the trachea or by inhalation of inert (asphyxiating) gases such as nitrogen or helium. If the asphyxiating procedure is not stopped within twenty to thirty seconds after the cessation of respiration spontaneous recovery does not occur. However, if within periods of forty-five seconds to two and one-half minutes after cessation of respiration, suck-and-blow resuscitation with inert (asphyxiating) gas is applied, resuscitation of the circulation and respiration can be accomplished in 85 per cent of instances. The addition of 10 per cent carbon dioxide to the inert gas inhibits resuscitation by depression of the medullary centers. Bilateral vagus section before asphyxia is started prevents resuscitation with inert gas. The carotid sinuses are also concerned in this phenomenon. Asphyxial resuscitation is primarily a reflex phenomenon which is initiated most efficiently by suck-and-blow resuscitation. It appears that the mechanical inflation and deflation of the lungs by means of a suck-and-blow resuscitator with an inert gas brings into play two powerful reflex stimulants to the cardiovascular and respiratory centers. Of these reflexes the one occurring on suction deflation of the lungs appears to be the more powerful. This reflex does not appear to be stimulated by passive expiration as obtained by inflation and release of the lungs. It does not appear to be stimulated by manual artificial respiration, but it is quite regularly stimulated by suction deflation of the lungs. Asphyxial resuscitation is not recommended for clinical application, since the use of oxygen gives far superior results. Clinically, in advanced asphyxia when the respiration has ceased, the authors recommend that advantage should be taken of the phenomenon by the administration of oxygen or oxygen-carbon dioxide by the suck-and-blow type of resuscitation within safe limits of pressure.

Medical Annals of District of Columbia, Washington

12:455-494 (Dec.) 1943

Injuries of Urinary Tract. L. G. Lewis.—p. 455.
Injuries of Bones and Joints. R. V. Funsten.—p. 458.
Civilian Practice of Surgery Under War Conditions. H. B. Stone.—p. 463.
Current Status of Blood Substitutes. J. B. Alsever.—p. 465.
New Chemotherapeutic Agents in Treatment of Infectious Diseases—Sulfamerazine and Sulfamethazine. H. F. Dowling.—p. 468.

Military Surgeon, Washington, D. C.

93:443-492 (Dec.) 1943

*Mass Treatment with Sulfadiazine—Its Effect During an Outbreak of Meningococcic Meningitis. W. B. Lewis, H. Bolker and D. Klein.—p. 443.
Ten Factors in Closed Plaster Technic for Compound Fractures of Lower Extremities. E. T. Rumble and J. A. Millspaugh.—p. 448.
*Treatment of Sulfonamide Resistant Gonorrhea—Preliminary Report. E. C. Lowry and L. W. Hewit.—p. 449.
Convalescent Care and Morale of Patients. H. M. Thomas Jr.—p. 453.
Pilonidal Sinus: Method of Closure by Musculofascial Flaps. L. Miscall and J. S. Holder.—p. 457.
Incidence of Dental Caries Among Aviation Cadets. W. W. Senn. p. 461.
Fracture of Carpal Navicular. W. E. Allen Jr.—p. 464.
Lymphogranuloma Venereum: Review of 26 Cases at a Station Hospital in India. H. S. Fein and F. Berchenko.—p. 468.
Serum Reactions: Working Classification. J. A. Rudolph.—p. 473.
Anuria Caused by Sulfadiazine Crystallization: Report of Case. S. A. Nagel Jr. and D. O. Weiner.—p. 478.
Simplest Instrument for Removal of Foreign Bodies in Cornea. A. Appelbaum.—p. 479.
Rapid Staining Technic for Malarial Parasites. A. H. Chernoff.—p. 480.

Mass Treatment with Sulfadiazine During Meningococcic Meningitis.—Lewis and his associates report an outbreak of meningococcic meningitis at a camp and administration of small doses of sulfadiazine to an entire cantonment as a measure of control. The total number of cases in the outbreak was 49. The first control measures taken were the isolation of organizations in which a case appeared and the culturing of the nasopharynxes of contacts. The carrier rate averaged 12.5 per cent, but in individual organizations the rate varied up to 42.3 per cent. The carriers were admitted to special wards. Each was given 2 Gm. of sulfadiazine daily for two days, then 1 Gm. daily for two days. Fluids were forced. Clinically, no ill effects were noted in 897 patients. Every carrier who showed a positive nasopharyngeal culture subsequent to treatment with sulfadiazine was given a course of sulfanilamide; this was necessary in 30 carriers. Every carrier but 1 became negative with either sulfadiazine or subsequent sulfanilamide. He was treated with sulfathiazole solution to the nasopharynx and showed negative cultures thereafter. Carriers were returned to duty after the second consecutive negative culture, done on the sixth day after onset of treatment. That cure of meningococcus carriers is possible with the sulfonamide drugs has been demonstrated previously. However, large doses were used, necessitating hospitalization. The risk of complications due to the drug increases as the dosage is raised. With the described low dosage, the procedure is applicable to large organizations while on duty. The necessity for extensive laboratory facilities is obviated. The immediate cessation of case appearance, with the exception of 1 in a control group, points to the administration of the drug as the determining factor. Administration of sulfadiazine to large groups of men for reduction of the meningococcus carrier rate is feasible.

Treatment of Sulfonamide Resistant Gonorrhea.—Fifty consecutive cases of sulfonamide resistant gonorrhea were treated by Lowry and Hewit with fever therapy at 105 F. for five hours, after administration of 7 Gm. of sulfathiazole during the eighteen hour period prior to treatment. Eighty-two per cent of the cases so treated were cured by the first treatment. Fever therapy in combination with sulfadiazine has proved satisfactory in a small series of cases. Any factor which produces urethral stasis and uncleanliness contributed toward chronicity in these cases. Hence phimosis, the small meatus and urethral strictures were dealt with prior to the administration of fever therapy. General supportive measures such as a high caloric bland diet, forcing fluids to 4,000 cc. daily, hot sitz baths and absolute cleanliness of the genitalia are important factors in curing these cases. The period of hospitalization can be reduced by the use of fever therapy in combination with sulfathiazole in cases of sulfonamide resistant gonorrhea.

New England Journal of Medicine, Boston

229:855-884 (Dec. 2) 1943

*Abnormal Nitrogen Metabolism in Patients with Thermal Burns. F. H. L. Taylor, S. M. Levenson, C. S. Davidson and Margaret A. Adams.—p. 855.
Prevention of Vitamin Deficiencies in Wartime. F. R. Stenzel.—p. 859.
Erythroblastosis Fetalis of the Icterus Gravis Type: Report of 2 Cases with Recovery. D. A. Nickerson and R. T. Moulton.—p. 863.
Otogenous Infection Due to Proteus Bacillus: Report of Case. O. A. Lothrop.—p. 867.
Treatment of Thermal Burns: II. Recent Developments. C. C. Lund. —p. 868.

Abnormal Nitrogen Metabolism in Burns.—Taylor and his co-workers present observations on disturbances of the nitrogen metabolism in severely burned patients admitted to the Boston City Hospital as the result of the Cocoanut Grove disaster. Azotemia was a common complication of severe burns and was usually of the reversible type. It occurred early and was relieved when the urine output became normal. An irreversible type of azotemia occurred in severely burned patients excreting an acid urine in whom hemoglobinemia and hemoglobinuria were present. In certain severely burned patients having coincidentally hemoglobinemia and hemoglobinuria there was an abnormality in the partition of both the blood and the urine nitrogen, associated with the presence of large amounts of residual or undetermined nitrogen. The percentage of total nitrogen of the urine present as urea was low. Hypoproteinemia was a common finding in the severely burned patients. A transitory hypoproteinemia was associated with plasma loss and could be restored by simple dietary means, but the more progressive type was probably due to the loss of large amounts of nitrogen into the urine owing to increased protein catabolism, in addition to large losses of nitrogenous material at the burned surface. Inversion of the albumin and globulin ratio frequently occurred. When it happened early it was probably associated with a preferential loss of albumin, which has a low molecular weight. The cause of its late occurrence in burned patients has not been determined. The serious problem of the maintenance of adequate nitrogen metabolism in severely burned patients may be met in part by forced alimentation.

New Orleans Medical and Surgical Journal

96:239-290 (Dec.) 1943

Normal Variations of T Wave Seen Among Soldiers. H. Dupuy. —p. 239.
Important Considerations in Treatment of Toxic Goiter. W. H. Cole. —p. 247.
End Results in Surgical Treatment of Gastric Carcinoma. H. H. Morris Jr.—p. 254.
Pathology of Arteriosclerosis. G. N. Irvine Jr.—p. 262.
Atypical Pneumonia Complicating Severe Varicella in an Adult. L. E. Rausch, T. J. Grable and J. H. Musser.—p. 271.

New York State Journal of Medicine, New York

43:2351-2460 (Dec. 15) 1943

Administrative Difficulties of City Department of Health in Wartime. E. L. Stebbins.—p. 2385.
*Aseptic Necrosis and Bone Infarcts in Caisson and Noncaisson Workers. H. K. Taylor.—p. 2390.
Use of Strained Meats as Protein Basis for Milk Substitutes in the Treatment of Milk Allergy. J. Glaser.—p. 2399.
Tumors of Nose and Nasopharynx. A. A. Eggston.—p. 2403.
Treatment of Gallbladder Disease. A. F. R. Andresen.—p. 2413.
Intravenous Calcium Gluconate as Aid in Reduction of Posttransfusion Reactions. I. Sherman, B. B. Alperstein and B. K. Sherman. —p. 2419.

Aseptic Necrosis and Bone Infarcts in Caisson and Noncaisson Workers.—Taylor directs attention to the fact that bone infarcts and areas of aseptic necrosis have been found in workers who worked under increased atmospheric pressures. He describes the roentgenologic aspects of these lesions and discusses their probable relation to aeroembolism. Lesions of a similar type have been observed in persons who were not exposed to increased pressures. He studied 50 persons with bone infarcts and aseptic necrosis and found that 12 had a history of exposure to compressed air. The shaft and joint lesions do not develop immediately following decompression illness. Considerable time must elapse. The shaft lesions are usually asymptomatic and are discovered accidentally. The joint lesions develop secondary arthritic changes and are similar to chronic hypertrophic osteoarthritis. Shaft lesions are found in some patients and joint lesions in others, and some present both types of lesions. The same lesions were observed in 38 persons who never worked under compressed air and were not subjected to sudden or violent changes in atmospheric pressure. The lesions in the two groups present similar x-ray appearances and cannot be differentiated one from the other. In the caisson worker the causative factor is the inert gas nitrogen in bubble formation, as an embolus, as pressure or both, interfering with the circulation to the part. In the noncaisson worker there is no apparent etiologic factor. The bone lesions may be single; usually they are multiple and often bilateral. Workers under compressed air presented extensive and multiple lesions more often than the others. In the noncaisson worker, when the lesion is single and not extensive, the reparative changes are usually greater. Deep sea divers and aviators may develop aeroembolism, but there are no recorded evidences of bone changes in either naval or air personnel who have had aeroembolism.

Oklahoma State Medical Assn. Jour., Oklahoma City

36:507-552 (Dec.) 1943

Treatment of Compound Fractures. M. A. Connell.—p. 507.
Problems of Induction. M. L. Belot.—p. 511.
Observations on the Negro Diabetic. P. B. Cameron.—p. 517.

Pennsylvania Medical Journal, Harrisburg

47:193-320 (Dec.) 1943

Infant Feeding in a Rationed Era. N. M. MacNeill.—p. 209.
Diagnosis and Treatment of Sciatic Syndrome. S. N. Rowe.—p. 212.
Gold Therapy in Arthritis. J. Lansbury.—p. 216.
Intestinal Obstruction. M. Lick.—p. 221.
Roentgen Ray Treatment of Acute Inflammatory Conditions. G. E. Pfahler.—p. 225.
Plication of Internal Oblique Muscle in Repair of Direct and Recurrent Hernias. J. A. Soffel.—p. 229.

Public Health Reports, Washington, D. C.

58:1729-1760 (Nov. 26) 1943

*Promin Treatment of Leprosy. Progress Report. G. H. Faget, R. C. Pogge, F. A. Johansen, J. F. Dinan, B. M. Prejean and C. G. Eccles. —p. 1729.
Experimental Transmission of Rickettsiae of Spotted Fevers of Brazil, Colombia and United States by Argasid Tick Ornithodoros Nicollei. G. E. Davis.—p. 1742.

58:1761-1792 (Dec. 3) 1943

Detection and Analysis of Arsenic in Water Contaminated with Chemical Warfare Agents. C. C. Ruchhoft, O. R. Placak and S. Schott. —p. 1761.
Smallpox in Relation to State Vaccination Laws and Regulations. B. C. Hampton.—p. 1771.

58:1793-1836 (Dec. 10) 1943

Emergency Minimum Sanitation Standards. B. C. Hampton.—p. 1793.

Promin Treatment of Leprosy.—Promin, sodium salt of p,p′-diaminodiphenylsulfone-N,N′-di-(dextrose sulfonate), has been used in experimental tuberculosis in guinea pigs with remarkable success. Its experimental use in leprosy was commenced by Faget and his associates two years ago. Promin can be given orally or intravenously, but oral doses are tolerated for such short periods that this mode of medication was abandoned in favor of the intravenous injection. The majority of patients have received from 1 to 5 Gm. daily for six days a week. Most of the patients were given the 5 Gm. dose, and the course of treatment was continuous for months with only short intervals of rest of one to two weeks three times a year. The intravenous administration may cause a slow destruction of the erythrocytes. The authors do complete blood counts routinely every two weeks on every patient on promin treatment. Anemia occurred in 46 per cent of cases after six weeks of intravenous promin therapy. The longer the treatment, the greater the number of anemic patients. During the complete course of treatment the erythrocytes fell to 3.5 million or less in 71 per cent of cases and below 3 million in 9 per cent. Antianemic therapy, with or without cessation of promin, was successful in raising the red blood cells and hemoglobin to

their former levels in the great majority of these cases. After hemolysis the most important toxic reaction was allergic dermatitis, which occurred in 16 per cent of the patients. Two thirds of these have been desensitized; in only 3 per cent has the procedure proved entirely unsuccessful. Allergic rhinitis developed in 1 patient. Other untoward reactions, headaches and nausea, are generally mild and ephemeral. Nausea, which occurred in 35 per cent of cases, is transitory and can be prevented by injecting the drug more slowly. Of 22 patients who took the intravenous promin therapy for at least twelve months, 15 were improved, 6 were stationary and 1 was worse. Among an additional 46 patients who had taken intravenous promin therapy for shorter periods, 26 showed objective improvement, 17 were stationary and 3 were worse. There were 16 patients in whom treatment was discontinued. A control experiment was undertaken with a prominlike drug, Interval Antiseptic 307. This substance, which is sodium-4,4′-diaminodiphenylsulfone-2-acetylsulfonamide, is closely related chemically to promin and has a similar action in leprosy. It was chosen for oral administration instead of promin. Twenty patients were treated with this drug and 20 were given placebos. After eight months there was a difference in the two groups. While the course of the disease continued unabated in the control group, it was checked in a considerable percentage of the treated patients. Promin can be considered to have opened a new avenue in the chemotherapy of the mycobacterial diseases.

Radiology, Syracuse, N. Y.

41:527-636 (Dec.) 1943

Symposium on Injuries of Head, Chest and Back: Head Injuries. H. E. Mock.—p. 527.
Some Considerations Concerning Roentgen Diagnosis of Skull Fractures. J. C. Kenning and I. D. Harris.—p. 532.
Management of Jaw Fractures. F. W. Merrifield.—p. 539.
Roentgenologic Diagnosis of Chest Injuries. J. P. Bennett.—p. 543.
Back Injuries: Introduction. H. E. Mock.—p. 551.
Anatomic and Physiologic Considerations Prerequisite to Diagnosis of Back Trauma. E. J. Carey.—p. 554.
Differential Diagnosis of Traumatic Lesions of Spine. S. A. Morton. —p. 560.
Pseudotumor of Bone in Hemophilia. A. P. Echternacht.—p. 565.
Diffuse Calcification of Placenta Demonstrable in Vivo. S. Thomas. —p. 573.
Pneumonic Densities Obscured by Cardiac Shadow. G. H. Stein.—p. 576.
*March Fracture of Tibia. G. R. Krause and J. R. Thompson Jr.—p. 580.
*March Fracture of Inferior Pubic Ramus: Report of 3 Cases. D. B. Jones.—p. 586.
Basilar Impression: Position of Normal Odontoid. W. M. Saunders. —p. 589.

March Fracture of the Tibia.—Krause and Thompson encountered 3 instances of march fracture of the tibia within two months, and the search of the files revealed a fourth case. Although stress fractures of the tibia are not as frequent as those of the metatarsals, they will probably be seen with increasing frequency in the armed forces. The fracture line is usually narrow and must be sought for carefully. Callus formation is seen early. The history is quite similar to that obtained in march fractures of the metatarsals, varying only in the site of pain.

March Fracture of the Inferior Pubic Ramus.—Jones presents clinical histories of 3 soldiers aged 34, 25 and 26 whose complaints were diagnosed as march or stress fracture of the inferior pubic ramus. There was no history of trauma. X-ray examination revealed rarefaction across the inferior ramus of the pubis with a zone of periosteal proliferation at the margins, the periosteal reaction being most prominent on the upper margin of the ramus. The only case previously discovered in a superficial survey of the literature is that of Wilhelm, in which the x-ray appearance was in all respects comparable to that in the cases reported here. This case appeared in the German literature and was discovered in a member of the German army. The author stated that these and all "march" or "insidious" fractures occurred in men of previous sedentary existence who were suddenly introduced into rigorous military training. The fractures occurred in trainees and not in the older conditioned soldiers. These criteria were present in the cases described in this report.

Review of Gastroenterology, New York

10:279-322 (Nov.-Dec.) 1943

Case of Human Parasitosis Caused by Isospora Bigemina. J. Raifman. —p. 279.
Nutritional Problems in Cardiac Disorders. H. A. Monat.—p. 282.
Clinical Investigation of Aluminum-Phosphate Gel. R. Upham and N. W. Chaikin.—p. 287.
Anatomic Basis for Study of Splanchnoptosis: Paths of Ascent to Erect Position from Birth to Fourth Year of Life and Their Relation to Splanchnoptosis and Body Form and Body Cavities. Agnes C. Vietor. —p. 298.
Treatment of Gallbladder Syndrome. B. M. Bernstein.—p. 311.

Rhode Island Medical Journal, Providence

26:275-322 (Dec.) 1943

Rehabilitation Center. A. P. Aitken.—p. 286.
Medical and Surgical Treatment of Varicose Veins, Pulmonary Emboli, and Gastric and Duodenal Ulcer. A. V. Migliaccio, A. W. Allen and W. B. Breed.—p. 293.
Wartime Civilian Medical Care. E. S. Wing, C. J. Ashworth and A. L. Potter.—p. 294.
Women in Industry. C. L. Farrell, H. E. Harris, S. D. Davies, M. H. Sullivan and W. P. Buffum.—p. 303.

South Carolina Medical Assn. Journal, Florence

39:263-290 (Nov.) 1943

Medical Statistics of South Carolina: III. Evolution of Distribution of State Physicians. A. M. Lassek.—p. 263.
Certain Related Factors to Be Considered in Use of Digitalis. J. T. Quattlebaum.—p. 267.
Military Medical Tour. J. W. White.—p. 281.

39:291-324 (Dec.) 1943

Hepatorenal Syndrome. H. G. Smithy and D. L. Maguire Jr.—p. 291.
Pneumothorax in the Newborn. G. D. Johnson.—p. 299.

Southern Medical Journal, Birmingham, Ala.

36:781-840 (Dec.) 1943

The Nation's Most Valuable Asset and Its Greatest Problem. H. F. Garrison.—p. 781.
Negro Demonstration Center for Maternal and Newborn Care in Alabama. T. M. Boulware, Elizabeth LaForge and R. C. Stewart.—p. 784.
Military Gastroenterology. J. W. Annis and F. G. Eldridge.—p. 791.
Uses of Quinine in Symptomatic Treatment of Acute Respiratory Infections. G. S. M. Cowan.—p. 798.
Ventricular Tachycardia as Therapeutic Problem in Coronary Thrombosis. R. L. McMillan.—p. 800.
Auricular Flutter. N. Bloom, R. Hoffman and Sara Hoover.—p. 804.
Hypertrophy and Dilatation of Right Side of Heart. M. C. Wheelock. —p. 806.
Acute Syphilitic Meningitis: Clinical Study of 15 Cases. J. E. Skogland.—p. 809.
Movable Kidney. J. U. Reaves.—p. 815.
*Trichomoniasis in Male: Seventh Venereal Disease? G. G. Allison. —p. 821.
Glioblastoma Multiforme of Brain and Spinal Leptomeninges: Report of Case. P. Marcuse.—p. 823.

Trichomoniasis in the Male.—Allison found that the motility of the trichomonads in the male urethra is quite frequently lost, so that examination of the hanging drop obtained from washing a tiny cotton swab in the urethral discharge suspended in isotonic solution of sodium chloride does not reveal the parasite. When the meatus is cleaned and fresh pus is expressed from the urethra and smeared thinly on a slide which is then stained with Sellers Negri stain, this parasite may be easily identified. Urethral itching and a milky, watery discharge from the male urethra should call for a careful search for this organism, particularly in the absence of gonococci and Treponema pallidum. The author found in his private practice an incidence of 15 per cent of trichomonads in the male. This group was composed entirely of white patients. The organism was found independent of gonococci as well as associated with them. In about 1 per cent of the males the trichomonads were found in the prostatic and seminal vesicular secretions. Several sterile patients were found infected with trichomonads. The author examined a large number of Negro draftees. Many of them presented a milky whitish urethral discharge smears of which showed a large number of epithelial cells, a moderate number of pus cells and a fair number of monocytes. Trichomonads were observed in a large number of these smears. In the treatment the urethra must be examined with a bougie. In the presence of a congenital stricture of the meatus a meatotomy must be done and the urethra dilated to a 30 F. caliber. This

usually frees the patient of trichomonads. Instillation of 1 per cent gentian violet by catheter seems helpful. Massage of the prostate should be used as indicated. Since infection with trichomonads is accompanied by a discharge, irritation and symptoms similar to those of gonorrhea, it may have to be regarded as another venereal disease, the seventh venereal disease.

Southwestern Medicine, Phoenix, Ariz.

27:267-296 (Nov.) 1943

Federal Medical Legislation. M. P. Spearman.—p. 270.
Vomiting During First Days of Life. E. H. Running.—p. 274.
Electrogalvanism in Oral Cavity: Case Report. M. L. Kent.—p. 276.
Menstrual Problems of Adolescence. G. Heusinkveld.—p. 277.

Surgery, St. Louis

14:807-958 (Dec.) 1943

*Surgical Treatment of Recurrent Inguinal Hernia with Special Reference to a Cooper's Ligament Herniotomy and the Use of Free Fascial Grafts. S. A. Swenson and H. N. Harkins.—p. 807.
Study of Recurrences Following Inguinal Hernioplasty, with Report of New Operation. H. E. Stein and D. Casten.—p. 819.
Surgical Treatment of Carcinoma of Papilla of Vater. H. K. Gray and W. S. Sharpe.—p. 831.
Chronic Constrictive Pericarditis. J. E. Strode and S. E. Doolittle.—p. 847.
Recurrent Postoperative Atelectasis: Report of Case. H. T. Thompson.—p. 866.
Treatment of Abscess of Thyroid Gland Causing Tracheal Obstruction. W. H. Prioleau.—p. 871.
*Impression Technic for Reconstruction of Large Skull Defects. E. S. Gurdjian and J. C. Brown.—p. 876.
Congenital Atresia of Esophagus: Description of an Operative Procedure. E. J. Poth.—p. 882.
Experimental Studies on Alimentary Azotemia: IV. Role of Liver and Kidneys. H. N. Harkins, D. H. Hooker, R. T. Boals, B. E. Brush and C. F. Chunn.—p. 891.
Clinical Study of Relative Efficiency for Nitrogen Metabolism of Casein Digest Administered Intravenously and Protein Ingested by Mouth. A. Brunschwig and Nancy Corbin.—p. 898.
Varicose Veins: New Technic Resulting in Rapid Obliteration of Venous Channels Without Formation of Usual Large Thrombi. M. B. Pearce.—p. 901.
Synthetic Vitamin K and the Thrombosis of Veins Following Injury. C. B. Morton, E. W. Shearburn and R. E. Burger.—p. 915.
Acute Diverticulitis of Jejunum—Case Report. F. F. Rudder.—p. 921.
Tumors of Salivary Gland Origin: So-Called Mixed Tumors. G. F. Robbins.—p. 924.
Some Studies with Zephiran, with Particular Reference to Its Use in Time of War. H. B. Shumacker Jr. and W. R. Bethea Jr.—p. 931.

Recurrent Inguinal Hernia.—Swenson and Harkins review the factors involved in the recurrence of inguinal hernia and present the application of the McVay modification of the Lotheissen operation for femoral hernia to recurrent inguinal hernia. This procedure utilizes Cooper's ligament instead of Poupart's ligament. The authors also discuss the use of free fascia grafts in recurrent inguinal hernia. They present a series of 37 consecutive operations for recurrent inguinal hernia, most of which were performed with the use of free fascial grafts or a Cooper's ligament (McVay) herniotomy. No recurrences of hernia have been noted to date in the cases which the authors have followed.

Impression Technic for Reconstruction of Skull Defects.—Gurdjian and Brown describe an impression technic for the building of inanimate transplants for large skull defects. They report a case in which a large bone flap had to be sacrificed because of severe edema, following removal of a malignant meningioma, from a woman aged 21. Plexiglass (methylmethacrylate) was used to cover the bone defect. At the end of fifteen months the plexiglass transplant was still in excellent repair, with no evidence of deleterious reactions to the patient.

Texas State Journal of Medicine, Fort Worth

39:415-460 (Dec.) 1943

Clinical Aspects of Arterial Hypertension. W. S. Horn.—p. 421.
Mental Hygiene. R. L. Hall.—p. 426.
Medical Witness. P. R. Denman.—p. 428.
Review and Revaluation of the Surgery of the Ptosed Colon. K. H. Aynesworth.—p. 430.
Bilateral Oophorectomy in Pregnancy. B. Farfel.—p. 432.
Surgical Management of Cholecystitis. J. D. Becton.—p. 433.
Bilateral Plastic Operations for Congenital Hydronephrosis: Case Report. R. S. Mallard.—p. 435.
Summary of Results Obtained in Fifty-Five Cataract Operations Performed in 1942. W. E. Vandevere.—p. 439.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Surgery, Bristol

31:101-204 (Oct.) 1943

Anatomy at Barber Surgeons' Hall. H. Lett.—p. 101.
Surgical Experiences in Middle East (1941 to July 1942). St. J. D. Buxton.—p. 111.
Etiology of Appendicitis. W. H. Bowen.—p. 127.
*Methods and Results of Treatment in Cases of Paralysis of Bladder Following Spinal Injury. E. W. Riches.—p. 135.
Case of Fibromyoma of Epididymis in an Undescended Testicle. G. Gordon-Taylor.—p. 146.
Orbital Tumours. A. E. Iles and A. R. Short.—p. 147.
Webbing of Neck, with Turner's Syndrome in Male. G. Flavell.—p. 150.
Bilateral Pulmonary Hydatid Cysts. A. L. d'Abreu and L. Rogers.—p. 153.
Popliteal Aneurysm, with Report of Case. G. L. Keynes and M. P. Morel.—p. 155.
Malignancy of Testicular Cancer in Man and Dogs. J. R. M. Innes.—p. 157.
Repair of Ruptured Popliteal Artery, with Note on Heparin Therapy After Arterial Suture. G. F. Langley.—p. 161.
*Cysts of Epididymis, the So-Called Spermatocele. C. P. G. Wakeley.—p. 165.
Inguinal Hernia. H. Edwards.—p. 172.
Cervical Rib Syndrome Associated with Contracting Lesion of Apex of Right Lung. A. L. d'Abreu.—p. 185.

Treatment of Paralysis of Bladder Following Spinal Injury.—According to Riches the total death rate from urinary sepsis in spinal injuries during the last war was 80 per cent. This report is based on a study of 35 cases treated in England during the present war. The stages through which the bladder passes after spinal lesions are (1) complete retention, (2) retention with overflow and (3) periodic reflex micturition. In partial lesions a state of voluntary micturition, indistinguishable from the normal, may follow directly from the first or second stages. A summary of the final state of micturition up to two years from the onset of the lesion shows that, of 33 patients with bladder paralysis, 30 per cent were left with permanent drainage by suprapubic cystotomy or urethral catheter and 70 per cent passed urine by the normal channel either voluntarily or by periodic reflex. The main obstacle to the attainment of a satisfactory act is urinary infection, which may cause death or permanent disability and is introduced by urethral catheterization. Urethral catheterization should be forbidden. The relief of retention is not an urgent matter. Overflow incontinence is a safe solution but may produce pressure sores. If retention must be relieved the alternatives which are safer than a urethral catheter are suprapubic aspiration, suprapubic catheterization and suprapubic cystotomy. Suprapubic catheterization can be combined with tidal drainage after two days. Any suprapubic opening must be made high and water tight. The patient should be transferred to a special center, for only at such a center, or in a well equipped hospital, should urethral catheterization be allowed. It should be reserved for mild cases and limited to two days. If there is no recovery after two days, suprapubic catheterization is indicated with subsequent tidal drainage. Tidal drainage with an indwelling urethral catheter should be used only by a staff that has special experience. There should be no delay in replacing it by suprapubic catheterization if inspection of the urine shows infection.

Cysts of Epididymis.—During the last twenty-five years Wakeley has treated 34 cases of epididymal cysts, 22 of which contained spermatozoa. The usual type of spermatocele is a retention cyst of the epididymis found at the upper pole of that organ. It is usually single and varies in size from that of a cherry to that of an orange. The swelling is cystic and translucent. Translucency is always present, but it varies in degree. The degree of opalescence is not dependent on the number of spermatozoa in the fluid. The correct treatment of a cyst of the epididymis large enough to cause symptoms is complete excision. Injections of sclerosing fluids may prove successful in a few cases, but they may convert a simple unilocular cyst into an adherent multilocular one. The author operates on hydroceles through the scrotal integument and sees no valid reason why this direct approach should be condemned and an indirect approach through an inguinal incision used. The cyst

should be carefully excised from the upper part of the epididymis. Complete excision is practically always possible and should be attempted, as incomplete excision leads to a recurrence. In cases in which the cyst is punctured and doubt exists as to whether complete excision has been performed the area of attachment to the epididymis should be cauterized with a diathermy point. Absolute hemostasis is essential to prevent a collection of blood in the scrotal integument.

British Journal of Urology, London

15:79-120 (Sept.) 1943

Radium Treatment for Carcinoma of Urinary Bladder: Report of 93 Cases Treated Over a Nine Year Period. A. Jacobs.—p. 79.
*Peyronie's Disease. A. J. D'Abreu.—p. 90.
Four Cases of Hypertension Which Benefited from Surgical Procedures. H. P. Winsbury-White.—p. 90.

Peyronie's Disease.—D'Abreu reports the treatment of a man aged 49 who had a lesion the width and hardness of a pencil and an inch in length in the mid-dorsal region of the penis. Radium needles were used superficially to treat the lesion on three consecutive nights. Examination at the end of three months showed that the lesion had completely disappeared. The author thinks that the disorder has nothing to do with the corpora cavernosa and that it is a contraction of the raphe between the two, something similar to what occurs in Dupuytren's contraction of the palmar fascia.

British Medical Journal, London

2:599-632 (Nov. 13) 1943

Comprehensive Attack on Pulmonary Tuberculosis. A. S. MacNalty.—p. 599.
Acceleration of Coordinated Muscular Effort by Nicotinamide: Preliminary Report to Medical Research Council. I. M. Frankau.—p. 601.
Anxiety States in Navy: Clinical Survey and Impression. G. V. Stephenson and K. Cameron.—p. 603.
Nitrous Oxide Anesthesia: Critical Evaluation. R. B. Gould.—p. 607.
March Fracture of Metatarsal Bones. H. H. Fouracre Barns.—p. 608.

Journal of Pathology and Bacteriology, Edinburgh

55:397-510 (Oct.) 1943

Cellular Changes in Lymph Nodes of Experimental Mice with Special Reference to Plasma Cell Development. L. Dorothy Parsons.—p. 397.
Growth of a Dibenzanthracene Produced Mouse Sarcoma in Chorioallantoic Membrane of the Chick. F. Jacoby, S. McDonald and D. L. Woodhouse.—p. 409.
Preparation of Precipitating Serums for Identification of Animal Species. H. Proom.—p. 419.
Protective Properties of Alpha Antitoxin and Antihyaluronidase Occurring in Clostridium Welchi Type A Antiserum. D. G. Evans.—p. 427.
Clumping of Pathogenic Staphylococci in Plasma. F. M. Berger.—p. 435.
*Production of Penicillin. S. W. Challinor and J. MacNaughtan.—p. 441.
Complement Activity of Serum of Healthy Persons, Mothers and Newborn Infants. B. Traub.—p. 447.
Extracts of Bacterium Shigae as Immunizing Agents in Mouse. H. Schütze.—p. 457.
Incidence and Significance of Haemophilus Influenzae in Chronic Bronchiectasis. P. R. Allison, J. Gordon and K. Zinnemann.—p. 465.
Action of Chemotherapeutic Drugs (Including Proflavine) and Excipients on Healthy Tissue. F. R. Selbie and J. McIntosh.—p. 477.
Mammary Carcinoma in Mice Following the Intranasal Administration of Methylcholanthrene. J. W. Orr.—p. 483.

Production of Penicillin.—According to Challinor and MacNaughtan increased yields of penicillin have been obtained by the addition of large amounts of phosphate buffer salts to a modified Czapek-Dox medium, and there was less variation between individual cultures in any one batch. These results were obtained with six different strains of Penicillium notatum. After ten days' incubation the average concentration of antibacterial substance was 6 units per cubic centimeter of culture fluid, compared with about 2 units on the original modified Czapek-Dox medium. Higher yields (6 to 10 units per cubic centimeter) have been obtained in a few experiments using a recently acquired strain of Penicillium notatum. In a few experiments increased yields of the antibacterial substance were obtained by culturing in the presence of calcium carbonate. Less pigment was formed in the buffered medium, and for this and other reasons the extraction and concentration of the active substance were facilitated.

Lancet, London

2:689-720 (Dec. 4) 1943

Mobile Neurosurgery in Warfare: Experiences in Eighth Army's Campaign in Cyrenaica, Tripolitania and Tunisia. K. Eden.—p. 689.
Concept of Psychosomatic Affection. J. L. Halliday.—p. 692.
Trichlorethylene—Air Analgesia in Childbirth: An Investigation with a Suitable Inhaler. A. Freedman.—p. 696.
Bleeding Gums and Gingivitis in Naval Ratings. A. C. MacDonald. p.—697.
*Bacteriologic Investigations in a Mass Chest Survey. J. W. Bigger.—p. 699.
Conduction Time for Human Pain Sensation. G. Gordon and D. Whitteridge.—p. 700.

Bacteriologic Investigations in Chest Survey.—Bigger states that Kerley carried out a preliminary miniature radiography survey of army personnel. When a miniature film showed any abnormality, full-size films were made. Radiologically suggested persons were admitted to the hospital, where they were investigated clinically. Of the 5,737 examined radiologically, 20 were referred to Bigger for bacteriologic investigation. The plan was to examine, from each patient, 10 specimens of sputum microscopically (direct and after concentration), 3 specimens of sputum by culture and 3 specimens of fasting gastric juice by culture. Bacteriologic methods established the diagnosis of active pulmonary tuberculosis in 13 cases. In all the 10 cases in which active pulmonary tuberculosis was suspected or actually diagnosed on radiologic and clinical grounds, the diagnosis was confirmed bacteriologically. In addition, tubercle bacilli were demonstrated in 2 cases with radiologic evidence of healed lesions and with no clinical signs of activity and in cases in which no radiologic or clinical evidence of pulmonary tuberculosis was found until some time after the bacteriologic diagnosis had been made. The author concludes that culture of both sputum and fasting gastric juice has been shown to be a practicable, valuable and early diagnostic method.

Medical Journal of Australia, Sidney

2:309-328 (Oct. 16) 1943

Rheumatic Infection in Childhood: Survey from Children's Hospital, Melbourne. G. E. M. Scott.—p. 309.
*Human Infection with Virus of Newcastle Disease of Fowls. F. M. Burnet.—p. 313.
Extraction of Cataract in Its Capsule (Total Extraction). R. A. de Castro Basto.—p. 314.

Human Infection with Fowl Virus.—According to Burnet it was recently reported that the virus of Newcastle disease of fowls shows a number of close resemblances to the human influenza viruses A and B. It becomes of interest therefore to report the occurrence of an accidental laboratory infection with this virus as indicating its potential human pathogenicity. Newcastle disease is an acute, highly infectious and highly fatal disease of fowls. The present infection was the result of a fairly large amount of highly infectious allantoic fluid being squirted from an egg into the right eye. The egg had been inoculated allantoically with material containing both Newcastle disease virus and influenza B in the course of experiments to detect possible "blockade" effects between the two viruses. The embryo was dead with typical Newcastle disease lesions. The following morning (December 17) the eye was severely inflamed. In the evening of December 17 moderate general symptoms were present. There was much mucopus, and free lacrimation occurred; about 0.25 cc. of fluid was collected with a pipet from the outer canthus. A filtrate of this was inoculated amniotically into four 12 day chick embryos; the filtrate produced death with typical lesions of Newcastle disease. Fluid from these embryos agglutinated fowl red cells, and the agglutination was inhibited specifically by anti-Newcastle disease virus immune serum. The original filtrate stored meanwhile in the refrigerator was diluted serially and inoculated allantoically into 12 day chick embryos. After three days all embryos inoculated with dilutions 1:10 and 1:100 were dead. There can be no doubt that Newcastle disease virus was actively multiplying in the eye and must be presumed directly responsible for the infection. Although it is possible that the coexistence of influenza B virus in the inoculum helped the establishment of infection, the evidence presented is sufficient to establish Newcastle disease virus as the agent responsible for an acute conjunctivitis with moderate symptoms of general toxemia in a human subject.

Book Notices

Borderlands of Psychiatry. By Stanley Cobb, Bullard Professor of Neuropathology, Harvard Medical School, Boston. Harvard University Monographs in Medicine and Public Health [Number 4]. Cloth. Price, $2.50. Pp. 166, with 27 illustrations. Cambridge, Mass.: Harvard University Press, 1943.

The trend of the development of modern psychiatry is fascinating to watch even for the general physician. More and more of the ordinary disturbances of life are coming beneath psychiatric observation. Cobb points out, for instance, that possibility in cases of more than a million stammerers, perhaps a million alcoholic addicts, 2½ million psychoneurotics, 650 thousand epileptics and 600 thousand other neurologic disorders. These are the millions who lie outside the schizophrenic, manic depressive and other dements. In a clear and succinct style Dr. Cobb discusses cases in these fields and demonstrates the possibilities when the most that modern science is now able to offer can be afforded to these people. The diagrammatic illustrations, the literary allusions and the directness of the discussion, above all, make this an inspiring and stimulating book. The final chapter on psychosomatics points this subject for the many who are now interested to whom the psychologic aspects of medicine were just a phrase. The concluding sentence, quoted from Wolff, predicts that sufficient observation and research will lead us eventually to the ability to say "to what extent fear is related to ulcers of the stomach, to what extent Raynaud's syndrome is associated with anxiety, to what extent Graves' disease is related to stress."

Clinical Laboratory Methods and Diagnosis: A Textbook on Laboratory Procedures with Their Interpretation. By R. B. H. Gradwohl, M.D., D.Sc., Director of the Gradwohl Laboratories and Gradwohl School of Laboratory Technique, St. Louis. In two volumes. Third edition. Cloth. Price, $20. Pp. 1,076; 1077-2130, with 783 illustrations. St. Louis: C. V. Mosby Company, 1943.

The new edition represents an increase of 500 pages over the second with amplification of the sections in hematology and particularly in parasitology and tropical medicine. This increase necessitated the two volumes, which also contain a substantial increase in color and black and white illustrations. A complete index is found at the end of each volume, which adds to the ease in use of the books in the laboratory. The encyclopedic character of the edition precludes its use as a textbook but serves as a complete reference book for the clinical and hospital laboratory. The illustrations in many instances show many improvements over previous editions; many excellent color plates and black and white illustrations are well placed. Some of the older cuts might well have been omitted. In the section on hematology recent developments on bone marrow cytology and the Rh factor are discussed. There is included a special section on hematology in infants and children. The preparation of blood plasma, liquid and dry, and shock therapy are also described.

The section on blood chemistry has been rewritten to include the more recent determinations, such as alkaline and acid serum phosphatase, iodide, bromine and the sulfonamides. A section on photolometric clinical chemistry has been added and is sufficiently well outlined to permit the technician to employ readily this means of determination. Dextrose tolerance is discussed, yet hypoglycemia is not considered. Cystine determination of nails and relation of sulfur therapy to arthritis are described, although these have been demonstrated to be of little value. Similarly other tests are described without pointing out their questionable interpretation.

Hypersensitiveness, the preparation of allergens and the cytology of nasal secretions are considered under special tests. Mycologic diagnosis is a notable portion of this section.

In bacteriology the fluorescent method of examining tubercle bacilli and Brewer's work on anaerobes are new additions. Bacteriologic methods are amply described, and short descriptions are given of the bacteriologic methods applied to clinical diagnosis. The laboratory diagnosis of virus disease is discussed by E. S. Sulkin. The technic of the Kahn and Wassermann tests is amply described, and the Mazzini test together with others is included.

The chapter on tissue cutting and staining has been rewritten. A short chapter on preparation of museum specimens, a neglected subject in most books, is noteworthy. Toxicology and detection of crime by laboratory methods fill a need in a laboratory reference book. The section on parasitology and tropical medicine has been thoroughly rewritten and well illustrated and should be useful with the new necessity of studying tropical diseases that now occur in our armed forces.

The work represents a considerable accumulation of methods, most of which are accurate and reliable; on the other hand, procedures and tests are described without any critical evaluation. Some of these procedures are of no value or have been tried and found unreliable. On the whole these volumes constitute a ready reference for laboratory workers, especially at times when it may be necessary to look up allied subjects that frequently are added to the routine work of the average laboratory.

Biochemistry of the Fatty Acids and Their Compounds, the Lipids. By W. R. Bloor, Professor of Biochemistry and Pharmacology, The University of Rochester, Rochester, New York. American Chemical Society Monograph Series. Cloth. Price, $6. Pp. 387. New York: Reinhold Publishing Corporation, 1943.

This American Chemical Society monograph follows closely the recent one on Proteins, Peptides and Amino Acids reviewed in THE JOURNAL on Aug. 14, 1943 and likewise has two purposes: (1) to make available to persons not working with fatty acids up to date knowledge of this phase of biochemistry and (2) to survey progress made and to point out directions for future investigations. The author describes the biochemistry of fatty acids as a series of sequential events, from the ingestion of fat through its metabolism to its final excretion as it occurs both in normal and in many pathologic conditions.

Of the six chapters, the first approaches the description and analytical phases with discussions on classification and properties of fatty acids and related chemical substances with micro and macro methods of determination. Chapter II covers factors influencing the digestion and absorption of fats, including enzymes; stomach and intestinal digestion; absorption of split products and neutral fat, resynthesis, and transport. Following is a discussion of lipids of the blood in the normal person and in a host of abnormal conditions such as fasting, anemia, cancer, vitamin and mineral deficiencies, poisoning and drug effects, muscular dystrophy, epilepsy, infections such as tuberculosis and leprosy, mental diseases, organic diseases as angina pectoris, arthritis and disorders of the kidneys, liver, thyroid, adrenals and pancreas. Keeping the function of the lipids in the foreground, there follows the effect of the lipids on the properties of the blood, lipemia, embolism, hemolysis, coagulation, sedimentation time of corpuscles and various other physicochemical relationships. The lipids of the tissues of the normal human being are discussed in chapter IV with references to a few pathologic conditions. The fat content of tissues of plants is also brought forth, with special emphasis on bacteria, yeast and molds. A chapter on metabolism of lipids follows, emphasizing synthesis of various kinds of lipids, the important function of the liver in the metabolism of fats, the catabolism of fats, and ketogenesis. The final pages of the monograph take up the role of lipids in secretions and excretions, particularly in relation to the role in the embryo and young organism.

The monograph is well written and particularly well suited for one who has no intention of specializing in this field but who desires to keep his knowledge up to date. Sufficient explanations on formulas and names are usually given, so that constant reference to a chemical dictionary or encyclopedia is not necessary; nor is a mathematical background at all necessary. Although a complete author index is not given, an alphabetical bibliography is included at the end of each chapter for the numerous papers referred to in the text.

The Mind of the Injured Man. By Joseph L. Fetterman, M.A., M.D., Assistant Clinical Professor of Nervous Diseases, Western Reserve University School of Medicine, Cleveland, Ohio. Cloth. Price, $4. Pp. 260, with 28 illustrations. Chicago: Industrial Medicine Book Company, 1943.

The author is a competent neurologist with wide experience. In his introduction he says "The scope of this subject extends beyond the patient toward a wider circle of contacts such as adjustors, lawyers, industrial commissions and even courts. To explain to such interested lay persons as well as to physicians the different types of illness and their relation to injury

is a major aim of this book." The style and material necessarily are adapted to the understanding of the lay reader. The author has made his subject extremely lucid; his book will be widely used in medicolegal and industrial board proceedings. The material is fairly complete and accurate. There is a satisfactory bibliography and index, and the illustrations are clear. The book is too elementary for use by specialists in the field.

The Youngest of the Family: His Care and Training. By Joseph Garland, M.D., Physician to Children's Medical Department, Massachusetts General Hospital, Boston. Second edition. Cloth. Price, $2. Pp. 182, with 11 illustrations. Cambridge, Massachusetts: Harvard University Press; London: Oxford University Press, 1943.

This excellent compact manual for the inexperienced mother was revised by Dr. Garland after a decade because the stress of present circumstances necessitated it. "There are more babies now than ever before, and fewer doctors to attend them. Babies are being hurried from one end of the country to the other, from camp to cantonment, and from flying field to port of call." His advice is concise and brief, at times almost laconic. The illustrations are timely; for example, the two close-up illustrations on strapping a protruding navel are so helpful that almost any intelligent mother could do it herself without any other assistance. Throughout, the author's skill as an exceptionally experienced pediatrician is manifest. He constantly adheres to the tried and proved methods. There is an absence of any fads. The book may be recommended especially to the educated mother suddenly thrown on her own resources. She should not only enjoy reading it but find it rather easy to follow in many trials which she and her infant are at present encountering.

White Blood Cell Differential Tables. By Theodore R. Waugh, B.A., M.D., C.M., Pathologist-in-Chief, Royal Victoria Hospital, Montreal. Fabrikoid. Price, $1.60. Pp. 126. New York & London: D. Appleton-Century Company, Inc., 1943.

In recent years there has been an increasing appreciation by clinicians and laboratory workers that the finer diagnostic value of the differential white count resides in the absolute number of each cell type present rather than the relative values of the different forms. It is customary in many laboratories to report the differential in terms of the actual number of polymorphonuclears, lymphocytes, monocytes and eosinophils instead of the traditional differential percentage figures. The method is of particular significance during infancy and childhood and under pathologic conditions of leukopenia and leukocytosis. The absolute value for each cell type is obtained from the conventional differential count by multiplying the percentage found with the total count. The author has prepared a set of convenient tables for the rapid computation of the actual number of each cell type of white cell per cubic millimeter of blood. The use of the tables is explicitly stated by the author, and examples of how they are practically applied are set forth. The novice will also benefit from the terse introductory notes on white blood cell and differential counting. The pathologist, the hematologist and the technician will welcome these convenient tables, and clinicians interested in interpreting hemograms will also find them of value.

The Hospital in Modern Society. Edited by Arthur C. Bachmeyer, M.D., Director, University of Chicago Clinics, and Gerhard Hartman, Ph.D., Director, Newton Hospital, Newton Lower Falls, Mass. Cloth. Price, $5. Pp. 768. New York: Commonwealth Fund; London: Oxford University Press, 1943.

This volume is a collection of leading articles that have appeared in the periodical literature of the hospital field during the last decade. It represents the views of many distinguished authors whose articles have been selected because of their general interest and adaptability to present day problems. Ninety-eight authors have contributed to this book, including twenty-six hospital administrators and seventy-two from allied professional groups. Their material has been carefully arranged in twenty-nine chapters covering a total of one hundred and forty-five articles, which are of particular interest to hospital superintendents, administrative assistants, department heads, students and others who wish to broaden their knowledge and understanding of the principles of hospital organization and management. Broad in scope and well balanced, the book encompasses all major activities of the hospital administrative field. It offers first a general historical review and then turns promptly to the practical aspects of administrative organization, medical staff relationships, nursing education, departmental services, medical records, hospital construction and maintenance, financial and legal matters, personnel, public relations, group hospital insurance and various subjects pertaining to public health. Many important articles that could not be included because of lack of space have been listed in the bibliographic references that accompany each chapter. Thus the reader is afforded a further opportunity to explore the literature of the hospital field. The book itself, however, has successfully crystallized into convenient form much of the material that was formerly widely dispersed and not readily available for study and reference.

The Genealogy of Gynaecology: History of the Development of Gynaecology Throughout the Ages 2000 B. C.—1800 A. D. with Excerpts from the Many Authors Who Have Contributed to the Various Phases of the Subject. By James V. Ricci, A.B., M.D., Associate Clinical Professor of Gynaecology and Obstetrics, New York Medical College, New York. Fabrikoid. Price, $8.50. Pp. 578, with 54 illustrations. Philadelphia: Blakiston Company, 1943.

This volume is devoted particularly to the history of the diseases of women as a special branch of medicine. The author takes up the subject chronologically, beginning with the prehistoric period. The first plate in the book is startling, since it shows the development of the vaginal speculum from 79 A. D. to 1821. The author has made reference to most of the widely known theses and books, although he does not yet seem to have solved the secret of Trotula, who was alleged to be the chief woman physician in the school of Salerno. The basic facts of this mystery are, however, recorded on page 243. Some people insist that there was no such person, whereas another writes that she was followed by a procession of mourners 2 miles long when she was buried. The book contains much that is of interest not only to the gynecologist but to all with even a casual interest in the history of medicine.

Rehabilitation of the War Injured: A Symposium. Edited by William Brown Doherty, M.D., and Dagobert D. Runes, Ph.D. Cloth. Price, $10. Pp. 684, with illustrations. New York: Philosophical Library, 1943.

This volume is composed of essays selected from a variety of publications and grouped here in order to make a quickly available volume on rehabilitation of the war injured. There has been no attempt to modify or edit the individual articles to prevent duplication of material, nor is there unity of approach to the subject or even completeness in any one field. Most of the illustrations, which presumably are halftones made from halftones, are miserably reproduced. The volume begins with neurology and psychiatry, then takes up plastic surgery, orthopedics, physical therapy, occupational therapy, the legal aspects of rehabilitation and a final chapter on the lesions associated with shipwreck. For a book thus thrown together it comes out somewhat better than might have been expected.

Psychology You Can Use. By William H. Roberts. Diagrams by James Macdonald. Cloth. Price, $2. Pp. 246, with illustrations. New York: Harcourt, Brace and Company, 1943.

The whole mechanistic psychology is the basis of this book, which apparently includes some small essays spaced out and printed in large type for purposes of publication. There is no reference to Sigmund Freud or psychoanalysis, although Alfred Adler gets a brief mention. There is a little something on remembering and forgetting that is quite inadequate. Altogether the book is hardly worth while.

Microscopic Technique in Biology and Medicine. By E. V. Cowdry, Professor of Anatomy, Washington University, Washington, D. C. Cloth. Price, $4. Pp. 206. Baltimore: Williams & Wilkins Company, 1943.

This is essentially an encyclopedia of data on the subject that it concerns. In alphabetical order comes a list of all the terms which might interest the worker with the microscope, including stains, apparatus, anatomic appearances, solutions and methods. In most instances a brief definition is followed by a concrete description and a bibliographic reference. Certainly the usefulness of the book is apparent.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

EFFECT OF FLUORESCENT LIGHTING ON THE EYES

To the Editor:—The Technical Advisory Service of the Smaller War Plants Corporation (a federal agency created by Congress under the Small Business Act) is endeavoring to assist the small business man in obtaining, from sources especially qualified in their respective fields, solutions to problems that are confronting him. A municipally owned public utility in the city of Seattle has submitted the following inquiry, and your assistance in its behalf will be appreciated: From people who work in a sitting or fixed position as in offices and drafting rooms, complaints of eye fatigue from fluorescent lighting are fairly common. In order that we may correctly answer these inquiries and complaints, will you please supply the following information: 1. The tube is bright and also dark 120 times a second. This speed "fools the eye," so that the tube has the appearance of burning (being bright) all the time. Does this speed also "fool the nerves" leading to the eye or are they fast enough to sense this dark and bright effect and try to make adjustments for it? (*a*) If so, would this cause a noticeable fatiguing of the eye? (*b*) Would this cause any permanent injury to the eye? 2. Does the color, temperature or the light spectrum peculiar to this light fatigue injure the eye? 3. Is there a band of energy, e. g. ultraviolet, that is being transmitted through the powders and glass which affects the eye? 4. Pertaining to the eye only, is there anything inherently wrong with this light source? 5. If the problem is purely psychic, will the eye soon condition itself to this new and different light source? William C. Brown, Seattle.
Consultant, Technical Advisory Service, Smaller War Plants Corporation.

ANSWER.—1. Fluorescent tubes require alternating current. Alternating current is usually 60 cycles, sometimes 25 cycles per second. Each time the current changes its direction there is an infinitesimal pause when no current is flowing. The duration of the pause is a small part of the cycle and is not long enough for the lamp to cool off and become dark. It merely becomes a little less light. When plotted as a curve it is not a straight line but wavy (a sine curve). It is gross exaggeration to speak of this as being "bright and also dark 120 times a second," when really it is bright and slightly less bright, not dark. The lowest part of each wave is far above the abscissa, which is zero or darkness. How the eye reacts to this type of illumination depends on what it is looking at. Looking at a small area such as a book on the desk or a picture projected on a screen, the sensation produced by a very short exposure persists for an appreciable time. If the images are projected as in ordinary amateur motion picture projectors, sixteen per second, the pause between two successive images is so short that the sensation persists from one to the next and no flicker may be noticed. With the professional projectors the speed is about twenty-five or more per second and there is still less flicker. This presupposes that the successive images fall on the same area of the retina.

If they do not, then an entirely different effect is produced. The successive images fall on a series of different areas of the retina and each area will give its separate sensation. Each will persist long after the next is initiated, and so a string of separate images is seen. If the object is a small light, a string of lights is seen. This can happen when the object moves rapidly across the field of vision or it can happen when the object is stationary but the eye moves its visual line across the field of fixation. In either case the successive images will stimulate not the same area of the retina but a series of areas, whose separation will depend on the speed of the movement.

The way it works out in practice is this: When the work to be done involves little extensive movement, as is the case in reading or writing, no flicker is noticed; but if there is rapidly moving machinery or the like, the movement will not be smooth and continuous but jerky in rapid steps or if the work involves shifting the gaze rapidly from one part of the field to another there may be an annoying, jerky, flicker sensation. This is readily demonstrated with light pulsating even as rapidly as 250 and more times per second, with which absolutely no flicker would be observed in steady looking because the images would fall on the same area of the retina.

There is a very effective way to eliminate all stroboscopic or flicker effect with fluorescent tubes, making them far steadier than any other light on alternating current, and that is by combining the tubes in pairs, so coupled that the maximum of one tube corresponds with the minimum of the other, thus compensating for the flicker. These tubes have been in use for some years now and are very satisfactory. Only the high power (40 to 100 watt) tubes are so made, not the 25 watt.

To answer the specific questions:

(*a*) Whether the pulsating character of the fluorescent tube would "cause noticeable fatiguing of the eyes" would depend on the kind of work. For ordinary reading or writing involving no extensive rapid movements of the eye or of the work itself, no stroboscopic effect would be produced. The light would act like any other light. If the work involved rapid shifting of the gaze from one side of the desk to the other, an annoying flicker might be produced which would irritate and fatigue the eyes. This would be completely abolished if the double tubes were used.

(*b*) It would cause no permanent injury to the eye.

2. No. The ordinary regular fluorescent lamp is of excellent color and does not fatigue or injure the eyes. Tubes of special colors, including daylight, are not as good as the regular.

3. No. There is no ultraviolet radiation from the fluorescent lamp which enters the eye.

4. There is nothing "inherently wrong with this light source."

5. The problem is not "purely psychic." Like all other sources of light, the fluorescent lamps must be properly used so as to give enough light properly distributed, i. e. free from glare. The secret of good lighting is not in the selection of some special type of lamp but in the proper arrangement of the type chosen. It is ten to one that the source of the trouble complained of is the way the fixtures are installed—the amount and distribution of the light.

CLINICAL VALUE OF SERUM ACID PHOSPHATASE DETERMINATIONS

To the Editor:—What is the real significance in differentiating alkaline and acid phosphatase and the importance for differential diagnosis? None of the papers published recently clearly differentiate this point. I was especially confused by the following statement in one of the recent articles (Sullivan, T. J.; Gutman, Ethel Benedict, and Gutman, A. B.: Theory and Application of the Serum Acid Phosphatase Determination in Metastasizing Prostatic Carcinoma: Early Effects of Castration, *J. Urol.* 48: 426 [Oct.] 1942) on prostatic carcinoma and phosphatase activities: "We have found an adaptation of the King and Armstrong method for alkaline phosphatase satisfactory for the estimation of serum acid phosphatase activity." Could you recommend a book that deals only with sources of errors in laboratory tests? M.D., Ohio.

ANSWER.—Serum acid phosphatase determinations have been shown to be of clinical value primarily in one condition, namely in metastasizing prostatic carcinoma, where the values may be enormously increased. Acid phosphatase occurs in and is apparently elaborated by the acinar epithelium of the prostate gland. The concentration of the enzyme is high in adult human prostate tissue and in the prostatic secretion. When carcinomatous prostate tissue metastasizes, invasion of lymph or blood channels is accompanied by escape of the prostatic secretion into the circulation, thus raising the acid phosphatase content of the blood serum. In such cases an increase in the serum acid phosphatase has been found to be an important diagnostic aid, while a subsequent decrease is an excellent guide to the antiandrogen therapy now advocated. Serum alkaline phosphatase values are increased primarily in diseases involving the skeleton, such as Paget's disease, rickets, hyperparathyroid disease, osteomalacia, osteogenic sarcoma and other tumors primary in the skeleton. It is generally considered that serum acid phosphatase shows optimum activity at p_H 5.0 and the serum alkaline phosphatase at p_H 9.3.

The clinical significance and usefulness of the phosphatases have been reviewed in two recent papers (Sunderman, F. W.: Recent Advances in the Significance and Interpretation of Phosphatase Measurements in Disease, *Am. J. Clin. Path.* **12**:404 [Aug.] 1942, and Jaffee, H. L., and Bodansky, Aaron: Diagnostic Significance of Serum Alkaline and Acid Phosphatase Values in Relation to Bone Disease, *Bull. New York Acad. Med.* **19**:831 [Dec.] 1943). In addition to the paper cited in the query, Alexander B. Gutman presented an excellent discussion (Serum "Acid" Phosphatase in Patients with Carcinoma of the Prostate Gland: Present Status) in THE JOURNAL, Dec. 5, 1942, page 1112. The Gutmans described their modification of the King and Armstrong method sometime ago (Gutman, Ethel Benedict, and Gutman, A. B.: Estimation of "Acid" Phosphatase Activity of Blood Serum, *J. Biol. Chem.* **136**:201 [Oct.] 1940). The subject is too recent and specialized to expect adequate discussion in books on laboratory diagnosis. There is no book dealing exclusively with sources of error in laboratory tests. However, methods are given and briefly discussed in the following recently revised textbooks:

Levinson, S. A., and MacFate, R. P.: Clinical Laboratory Diagnosis, ed. 2, Philadelphia, Lea & Febiger, 1943, pp. 328-332.

Gradwohl, R. B. H.: Clinical Laboratory Methods and Diagnosis, ed. 3, St. Louis, C. V. Mosby Company, 1943, vol. 1, pp. 303-310.

NONTHROMBOPENIC PURPURA

To the Editor:—A white woman aged 59 is suffering from a hemorrhagic condition. Six months ago she had a rather serious epistaxis, and since that date bleeding from various organs has occurred. She gets subcutaneous hematomas from the slightest bruises. She had a rather severe hemorrhage from the kidneys a few weeks ago simulating acute nephritis. Her condition grew gradually worse. At present hemorrhage is occurring from the upper eyelids and gums, besides severe epistaxis. She has had seven deliveries and four miscarriages, one delivery being by cesarean operation. She was treated in 1941 for high blood pressure; otherwise the medical and surgical history is negative. She never had a hemorrhagic condition before. The patient is obese, the heart is slightly enlarged to the left and there is a loud systolic murmur. The blood pressure varies from 140 to 200 systolic and 80 to 110 diastolic. The latest blood pressure taken was 160/90. The pulse is regular, 76. The red blood cell count is 4,120,000, hemoglobin 75 per cent Sahli, white blood cell count 7,900 with 88 per cent polymorphonuclears and 12 per cent lymphocytes. The clotting time is 6 minutes, the bleeding time 1½ minutes; thrombocytes number 225,000. The probable diagnosis is athrombopenic purpura. There is apparently a high fragility and increased permeability of the capillary blood vessels. I have read quite a few articles about good results obtained in similar cases with vitamin P. Could you advise me about the commercial availability and dosage of this preparation, or could you advise me of any other course of treatment? Parenteral calcium and ascorbic acid 200 mg. daily has been tried without results. William E. Sag, M.D., Alliance, Ohio.

ANSWER.—With the evidence available, about the only diagnosis that can be made in this case is idiopathic nonthrombopenic purpura. Determinations of the blood prothrombin and fibrinogen and a study of the clot retraction should be made. Vitamin P has been used in these cases, but the results are not conclusive. It is given in the form of crude hesperidin 4 to 5 Gm. daily. It is not commercially available at the present time.

Outside of blood transfusions there is no established treatment in this type of purpura. Attention has been called recently to the beneficial effect of splenic irradiation on the increased vascular erythropermeability in both thrombopenic and nonthrombopenic purpura (Madison, F. W.; Squire, T. L., and Morton, S. A.: *Proc. Cent. Soc. Clin. Res.* **16**:12, 1943). Satisfactory response to irradiation would suggest that splenectomy might also be beneficial.

VIABILITY OF OVA AND SPERMATOZOA

To the Editor:—In "Queries and Minor Notes" in The Journal, Oct. 23, 1943, the answer to a question contains the statement that "an ovum lives for only about twenty-four hours, and unless it is fertilized within this time it dies. Spermatozoa are capable of fertilization for forty-eight to seventy-two hours." Would you kindly let me know on what evidence these answers rest? Frances I. Seymour, M.D., New York.

ANSWER.—Some of the evidence on which the answer rests is as follows:

F. P. Mall (*Am. J. Anat.* **22**:49, 1917, **23**:397, 1918) spoke of a twenty-four hour difference between what he called "copulation age" and "fertilization age." Dr. Mall believed that the ovum is not capable of fertilization for more than one day.

C. G. Hartman (*Am. J. Obst. & Gynec.* **7**:40 [Jan.] 1924) says "The egg cannot wait long for the spermatozoa . . . these must be on hand when ovulation takes place. It seems probable that hours, not days, measure the delay that results in sterile coitus."

C. G. Hartman (Time of Ovulation in Women, Baltimore, Williams & Wilkins Company, 1936, p. 37) says "We know now that fertile coitus and fertilization must be always synchronous, inasmuch as the unfertilized eggs live but a few hours and sperms most likely less than a day, within the female organs."

O. Grosser (*Biol. u. Path. d. Weibes,* Halben and Seitz, Berlin and Vienna, Urban and Schwarzenberg **6**:1, 1925) believes that the time of coitus, ovulation and fertilization practically coincides in all mammals studied, and the same most likely applies to human beings. Grosser also maintains that human sperm are not capable of fertilization for more than one or two days under normal conditions. In mammals, if fertilization does not take place within twenty-four hours, the ovum degenerates.

Emil Novak (Gynecology and Female Endocrinology, Boston, Little Brown & Co., 1941, p. 445) says "The life of the ovum after its extrusion from the follicle is very short, probably not more than a day or so and, according to some, only a few hours." Also "The evidence now seems quite clear that while they [spermatozoa] may retain their motility longer they lose their capacity to fertilize the ovum in about thirty hours."

K. Ogino (*Zentralbl. f. Gynäk.* **56**:721 [May 19] 1932) says that, on the basis of his study with the rhythm method of contraception, sperm are capable of fertilization for only three days. He quotes a similar opinion of fourteen other authorities. Ogino also says "The ovum is capable of fertilization for only a few hours in mammals and this can now be proved in humans directly by the rhythm method.

L. Latz (THE JOURNAL, Oct. 19, 1935, p. 1241) says (*a*) The life of the sperm cell within the female genitalia is less than forty-eight hours. (*b*) The ovum can be fertilized for only a few hours after ovulation. This is due mainly to two biologic factors. . . . Shortly before or just during the process of ovulation the first maturation division of the ovum occurs. The second maturation division occurs only when the ovum is fertilized. The time interval between the two mitotic cell divisions is short; a sperm must therefore be at hand to serve as a life saver of the ovum. Secondly, soon after the last follicle cells have fallen away from the ovum after its rupture the smooth surface covers itself with a sheath of albumin as it travels through the tube. This albumin sheath . . . offers a successful resistance to the penetration of the spermatozoa." Latz believes that the success of the rhythm method depends on the foregoing facts. Clinical evidence seems to bear out the foregoing statements because of (1) the high incidence of success of the rhythm method, (2) the success of mating of animals not only on the farm but also in monkeys (van Wangenen and Newton: *Surg., Gynec. & Obst.* **77**:539 [Nov.] 1943) and (3) artificial insemination in domestic animals.

ANAPHYLAXIS UNDER ANESTHESIA

To the Editor:—Recently while having a laceration of the hand repaired under ether anesthesia the patient died. Death was respiratory, and the pulse rate did not undergo appreciable change until after the respiratory difficulty began. The patient's physical condition had been excellent prior to surgery. The operation had been in progress for about seventy minutes. Twenty minutes prior to death combined gas-tetanus antitoxin had been administered subcutaneously without a preliminary skin test. There was no history of previous allergy. Complete autopsy revealed acute cardiac dilatation and acute pulmonary edema as the only findings of significance. 1. Do anaphylactic phenomena occur under anesthesia? 2. Is the skin test reliable when performed while the patient is under anesthesia? 3. Would not a serum reaction manifest itself by a change in respiration and pulse rate before twenty minutes had elapsed? 4. Will you please send me references concerning serum reactions in relation to anesthesia if such references be available? M.D., Kansas.

ANSWER.—1. Whether ether anesthesia protects animals or human beings from anaphylaxis is the major question involved in this history. This question is discussed in great detail in a thorough review and experimental work by L. M. Quill (Anaphylaxis During Ether Anesthesia, THE JOURNAL, Sept. 11, 1937, p. 854). Quill starts with the work of Besredka, who was the first to suggest that ether anesthesia protects animals from anaphylaxis. He then gives the succeeding work up to 1935, showing the various contradictory reports, and the tendency in most cases for later work to deny the effectiveness of ether anesthesia as a protection against anaphylaxis. Quill reports a case of anaphylaxis under ether anesthesia and mentions another case obtained by questionnaire from one of eight surgical clinics. In addition, this author by experimental work on dogs, guinea pigs and rabbits found that ether anesthesia did not inhibit anaphylaxis.

2. While the skin reaction is not affected by ether anesthesia, it is neither advisable nor practical to do such a test under anesthesia. To avoid the danger of severe horse serum reactions a history of allergy in general should be taken (hay fever, asthma, eczema, urticaria, migraine). More specifically, an inquiry should be made for symptoms resulting from contact with horses. Next an inquiry should be made regarding previous injections of horse serum (antitoxins) and any previous reactions following such injections. The skin test in suspected cases should be done intracutaneously, first with a dilution of 1:1,000 horse serum. The main reason for the impracticability of doing this under ether anesthesia is that the reaction should be observed for fifteen to twenty minutes. If negative a 1:100 dilution and, if necessary, a 1:10 dilution of horse serum should be used successively for intracutaneous testing. The sooner the reaction occurs the more dilute is the solution with which it is obtained, and the larger the wheal the more sensitive is the patient. It must be emphasized, however, that positive skin reactions with horse serum do not necessarily indicate clinical or at any rate dangerously clinical sensitivity to horse serum. The conjunctival test (edema, redness, burning and itching of the conjunctiva) obtained by instilling a drop of horse serum or of the antitoxin into the conjunctival sac is a less sensitive and a safer test. Most authorities consider this test a better index of clinical sensitivity to horse serum than is the skin test.

3. While fatal anaphylactic reactions usually occur more rapidly than indicated in this history, a twenty minute delay in the reaction is not incompatible with the diagnosis of severe or even fatal anaphylaxis.

4. In addition to the literature cited by Quill the monograph by Bret Ratner may be suggested. (Allergy, Anaphylaxis and Immunotherapy, Baltimore, Williams & Wilkins Company, 1943.)

SULFONAMIDES AND AGRANULOCYTOSIS

To the Editor:—A patient developed a severe agranulocytosis as a result of sulfadiazine therapy during an acute attack of what appeared to be bronchopneumonia superimposed on an allergic asthma. Would it be safe to try another sulfonamide such as sulfathiazole or would there be danger of agranulocytosis from the others also? M.D., Illinois.

ANSWER.—It is now generally agreed that agranulocytosis, with but few exceptions, is caused by drugs which contain the benzene ring in their chemical structure. The precise mechanism whereby these compounds precipitate agranulocytosis is not completely understood, but it probably reflects a state of hypersensitivity induced by the drugs in which the maturation of the granulocytes in the bone marrow is arrested. Although the patient in question developed agranulocytosis as the result of taking sulfadiazine, it does not necessarily follow that the patient would be sensitive to the other commonly used sulfonamides, even though the latter have a benzene ring in common. Nevertheless, in view of the lack of information, another sulfonamide would have to be utilized cautiously. It is of interest that Dameshek and Wolfson (*Am. J. M. Sc.* **203**:819 [June] 1942) have proposed the use of sulfathiazole for the treatment of agranulocytosis caused by aminopyrine, which possesses a benzene ring. Large doses of sulfadiazine have been administered successfully to a patient having agranulocytosis due to administration of aminopyrine.

EXAMINATION OF STOOLS FOR BACTERIA

To the Editor:—Is the following laboratory work indicated for a patient being treated with succinylsulfathiazole for chronic ulcerative colitis? Total bacterial count of 0.5 Gm. stool. Count of colon bacilli and nonhemolytic and hemolytic streptococci (if present) as well as other predominating bacteria. If this work is not indicated, why not? If this work is indicated, should it be expected "that a laboratory of a class A 400 bed general hospital do the work"? Please comment. M.D., Pennsylvania.

ANSWER.—Succinylsulfathiazole is a drug of such low toxicity, whose chief action is local and the absorption of which is so minimal, that the usual blood examinations are indicated only occasionally. The laboratory work necessary for making a bacterial count of the stool periodically is demanding of both time and material. The information obtained by this procedure is limited.

The moment succinylsulfathiazole is discontinued, the bacterial count will return to whatever was the usual normal for the particular individual under consideration. Study of the bacterial count as a means of determining the results of administration of the drug can be considered largely a research problem. Large numbers of patients have received succinylsulfathiazole preoperatively as well as for the treatment of some form of infectious disease with good results and without periodic bacterial counts of the stools.

SMALL STATURE AND TALIPES EQUINUS IN OFFSPRING

To the Editor:—During the course of examination of a patient a few days ago I came across the following interesting family history: The parents were normal but the mother was only 4 feet (122 cm.) in height. Eleven children had been born of this couple. Six were born with talipes equinus, 3 of them in both feet, 2 in the right foot and 1 in the left. Several of the children died in infancy. The question is whether the size of the mother could account for this high percentage of talipes equinus in the children. S. Boyd Calkins, M.D., El Rito, N. M.

ANSWER.—Since the cause of congenital talipes equinus is not definitely known, it is impossible to make an absolute statement with regard to whether the height of the mother would account for 6 out of 11 children having the deformity. The familial tendency has been noted and retention of an early uterine position is the most commonly accepted cause of the deformity. This may be the result of some anomaly within the uterus, so that the existence of such an anomaly would predispose to the occurrence of the multiple clubfoot in the same individual, and yet a single clubfoot may occur in a relatively large family with the others normal.

There is no way of establishing that the small stature of the mother would alter the uterus per se, but that there may be a uterine change in this individual that would account for the deformity is possible.

TENDER ABDOMINAL AORTA IN MIDDLE AGE

To the Editor:—I have frequently seen patients with the complaint of abdominal pain, especially in the lower abdomen. This distress is usually not associated with nausea or vomiting and as a rule has no relation to the type of food eaten, to the meal time or to bowel habit. Many have been operated on for appendicitis, only to have temporary relief and then a return of their former complaint of abdominal pain. Analysis of the urine is negative. The temperature is normal. The constant finding on physical examination is tenderness, frequently acute or exquisite in character, over the abdominal aorta both above and below the umbilicus and frequently in thin persons tenderness of or over the common iliac arteries. The latter finding is what, in all probability, prompts the removal of the appendix. For relief I have suggested rest, heat to the abdomen and different analgesics, but these have had little or no effect on the pain. I have tried to think of this condition of pain and tenderness over the aorta and its branches as being an involvement of the sympathetic nerves that lie on it. If there is an entity that this condition may be classified as, I would like to know about it. Also I shall appreciate any suggestions as to therapy. I have considered periarteritis nodosa but do not believe these cases could receive this diagnosis. Reid P. Joyce, M.D., Ashland, Ohio.

ANSWER.—Yes, there are many women, usually over 40, who have a decidedly tender abdominal aorta. Just why this should be, no one knows. Commonly at necropsy one finds the intima of the abdominal aorta ulcerated from one end to the other. The trouble is that many persons with this type of aorta have no complaint to make during life; they have no abdominal distress. So far as is known, there is no logical or efficient treatment for these tender aortas.

ATROPINE SULFATE FOR RELIEF OF UPPER RESPIRATORY TRACT SYMPTOMS

To the Editor:—A patient with chronic sinusitis and postnasal pharyngitis has for some time received symptomatic relief from bothersome postnasal drainage and salivation on administration of atropine sulfate 1/150 grain (0.0004 Gm.) from once to twice daily. Is there any danger of producing either local harmful effects in the nose and throat or any systemic harmful effects from continuing such dosage indefinitely? David B. Gregg, M.D., State Park, S. C.

ANSWER.—Atropine sulfate produces symptomatic relief by drying of the mucous membranes of the nose, throat and mouth. This is due to its depressing effect on the parasympathetic nerve endings. Signs of intoxication may appear from a dose as small as 1/60 grain (0.00108 Gm.) of atropine sulfate. Idiosyncrasy is common. Prolonged local use of the drug, as in ophthalmologic conditions, may produce an irritative reaction, possibly of an allergic nature.

Oral or parenteral use of atropine for symptomatic relief in chronic infections of the upper respiratory tract has the basic objection that it does not aid in combating the infection. Excessive drying may interfere with ciliary action, thereby weakening the defense against infection and interfering with drainage from sinuses.

MORPHINE AND PULMONARY EDEMA

To the Editor:—I was prompted by the reply to a question on the use of morphine in pulmonary edema (Queries and Minor Notes, Nov. 13, 1943) to call attention to some facts that appear not to be generally recognized. The first of these was well demonstrated in the Cocoanut Grove disaster by the group at the Massachusetts General Hospital. The observation was reported by Dr. Beecher and his colleagues, who paid special attention to the respiratory injury to these victims and called attention to its similarity to that produced by phosgene. In a number of the casualties who presented manic excitement and had obvious pulmonary irritation and damage the administration of oxygen, which promptly relieved the anoxia, was far more efficient than morphine in relieving the excitement. It was their conclusion that the administration of morphine to such patients was not only useless but also contraindicated, in that it increased the excitement and by depressing respiration contributed still further to the production of anoxia. A further more useful point is a simple procedure for the prevention and treatment of pulmonary edema in patients exposed to a variety of irritant chemical agents capable of producing pulmonary edema, long in use by the Medical Department of Merck & Co., Inc., for the treatment of persons exposed to chlorine, the oxides of nitrogen, phosphorus oxychloride and phosphorus pentoxide, each of which is capable of producing severe pulmonary injury and pulmonary edema if allowed to go untreated or if treated by the usual routine methods. This procedure consists simply in the administration of pure oxygen under atmospheric pressure but forcing the patient to expire against a pressure of from 1 to 6 cm. of water. In some five or six years since this method has been in regular use we have had between 200 and 600 cases each year of pulmonary exposure to these irritants, frequently of a grade sufficient to result in pulmonary edema. In none of these cases so treated has pulmonary edema ever appeared. The method is also applicable in the treatment of established pulmonary edema of severe grades. Whether or not morphine could be safely given to such a patient has not been decided, since there were no reasons for its administration. It would appear, however, that with the administration of pure oxygen in this manner the occurrence of some minimal respiratory depression, as produced by morphine, would not have the same significance it would present in the absence of such definitive and purposive treatment of the pulmonary irritation. D. F. Robertson, M.D., Roselle Park, N. J.